



SEQUENCE LISTING

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<120> STABILIZED IMMUNOGENIC HBC CHIMER PARTICLES

<130> ICC-136.0 (4564-88881)

<140> US 10/732,862
<141> 2003-12-10

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<170> PatentIn version 3.2

<210> 1
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<212> PRT
<213> Hepatitis B virus

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Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
165 170 175

Gln Ser Arg Glu Ser Gln Cys
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<210> 2
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<212> PRT
<213> Hepatitis B virus

<400> 2

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
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Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Gln Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
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Arg Thr Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg

165

170

175

Arg Ser Gln Ser Arg Glu Ser Gln Cys
180 185

<210> 3
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<212> PRT
<213> Hepatitis B virus

<400> 3

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Val Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145 150 155 160

Arg Thr Pro Ser Pro Arg Arg Arg Pro Ser Gln Ser Pro Arg Arg Arg
165 170 175

Arg Ser Gln Ser Arg Glu Ser Gln Cys
180 185

<210> 4
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<212> PRT
<213> Hepatitis B virus

<400> 4

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
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Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ala Ala Leu Tyr Arg Asp Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Asp
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Thr Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Val Gly Leu Lys
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
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Gln Ser Arg Glu Ser Gln Cys
180

<210> 5

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<212> PRT

<213> woodchuck

<400> 5

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
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Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
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Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro
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Arg Arg Arg Arg Ser Gln Cys
180

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<213> ground squirrel

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Met Tyr Leu Phe His Leu Cys Leu Val Phe Ala Cys Val Pro Cys Pro
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Thr Val Gln Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Asp Met Asp
20 25 30

Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu Asn Phe
35 40 45

Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp Thr Ala
50 55 60

Ala Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys Ser Pro
65 70 75 80

His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu Leu Thr
85 90 95

Arg Leu Ile Thr Trp Met Ser Glu Asn Thr Thr Glu Glu Val Arg Arg
100 105 110

Ile Ile Val Asp His Val Asn Asn Thr Trp Gly Leu Lys Val Arg Gln
115 120 125

Thr Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gly His Thr Val
130 135 140

Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro Ala Pro
145 150 155 160

Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu His Thr
165 170 175

Val Ile Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro Arg Arg
180 185 190

Arg Thr Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
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Arg Ser Gln Ser Pro Ala Ser Asn Cys
210 215

<210> 7

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> modified plasmid pkk223

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<210> 8

<211> 38

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<213> Artificial Sequence

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<223> plasmid pkk223

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ttcacataag gagaaaaaaa ccatggatc cgaagctt
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<213> Artificial sequence
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<223> malarial B cell epitope
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Ile Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
1 5 10 15

Pro Glu Leu

<210> 10
<211> 21
<212> PRT
<213> Artificial sequence
<220>
<223> Chimera of malarial T cell epitope and hepatitis B
<400> 10

Ile Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser
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Pro Cys Ser Val Thr
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<210> 11
<211> 15
<212> PRT
<213> Streptococcus pneumoniae
<400> 11
Lys Leu Glu Glu Leu Ser Asp Lys Ile Asp Glu Leu Asp Ala Glu
1 5 10 15

<210> 12
<211> 35
<212> PRT
<213> Streptococcus pneumoniae
<400> 12

Gln Lys Lys Tyr Asp Glu Asp Gln Lys Lys Thr Glu Glu Lys Ala Ala
1 5 10 15

Leu Glu Lys Ala Ala Ser Glu Glu Met Asp Lys Ala Val Ala Ala Val
20 25 30

Gln Gln Ala
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<210> 13
<211> 27
<212> PRT

<213> *Cryptosporidium parvum*

<400> 13

Gln Asp Lys Pro Ala Asp Ala Pro Ala Ala Glu Ala Pro Ala Ala Glu
1 5 10 15

Pro Ala Ala Gln Gln Asp Lys Pro Ala Asp Ala
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<210> 14

<211> 17

<212> PRT

<213> *Human immunodeficiency virus*

<400> 14

Arg Lys Arg Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Ile Thr Lys
1 5 10 15

Asn

<210> 15

<211> 31

<212> PRT

<213> *Foot-and-mouth disease virus*

<400> 15

Tyr Asn Gly Glu Cys Arg Tyr Asn Arg Asn Ala Val Pro Asn Leu Arg
1 5 10 15

Gly Asp Leu Gln Val Leu Ala Gln Lys Val Ala Arg Thr Leu Pro
20 25 30

<210> 16

<211> 10

<212> PRT

<213> *Influenza A virus*

<400> 16

Tyr Arg Asn Leu Leu Trp Leu Thr Glu Lys
1 5 10

<210> 17

<211> 23

<212> PRT

<213> *Influenza A virus*

<400> 17

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys
1 5 10 15

Arg Cys Asn Gly Ser Ser Asp
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<210> 18
<211> 23
<212> PRT
<213> Influenza A virus

<400> 18

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys
1 5 10 15

Arg Cys Asn Asp Ser Ser Asp
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<210> 19
<211> 23
<212> PRT
<213> Influenza A virus

<400> 19

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala
1 5 10 15

Arg Ala Asn Asp Ser Ser Asp
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<210> 20
<211> 19
<212> PRT
<213> Influenza A virus

<400> 20

Glu Gln Gln Ser Ala Val Asp Ala Asp Asp Ser His Phe Val Ser Ile
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Glu Leu Glu

<210> 21
<211> 23
<212> PRT
<213> Influenza A virus

<400> 21

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser
1 5 10 15

Arg Ser Asn Asp Ser Ser Asp
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<210> 22
<211> 23
<212> PRT
<213> Influenza A virus

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Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser
1 5 10 15

Arg Cys Asn Asp Ser Ser Asp
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<210> 23
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<212> PRT
<213> Influenza A virus

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Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys
1 5 10 15

Arg Ser Asn Asp Ser Ser Asp
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<210> 24
<211> 23
<212> PRT
<213> Influenza A virus

<400> 24

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys
1 5 10 15

Arg Ala Asn Asp Ser Ser Asp
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<210> 25
<211> 23
<212> PRT
<213> Influenza A virus

<400> 25

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala
1 5 10 15

Arg Cys Asn Asp Ser Ser Asp
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<210> 26
<211> 24
<212> PRT
<213> Influenza A virus

<400> 26

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
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Cys Arg Cys Asn Asp Ser Ser Asp
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<210> 27
<211> 24
<212> PRT
<213> Influenza A virus

<400> 27

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp
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<210> 28
<211> 35
<212> PRT
<213> Influenza A virus

<400> 28

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu
1 5 10 15

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu
20 25 30

Trp Gly Ile
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<210> 29
<211> 24
<212> PRT
<213> Influenza A virus

<400> 29

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ala Arg Ala Asn Asp Ser Ser Asp
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<210> 30
<211> 24
<212> PRT
<213> Influenza A virus

<400> 30

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Ala Asn Asp Ser Ser Asp

<210> 31
<211> 24
<212> PRT
<213> Influenza A virus

<400> 31

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
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Ala Arg Cys Asn Asp Ser Ser Asp
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<210> 32
<211> 24
<212> PRT
<213> Influenza A virus

<400> 32

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Ser Asn Asp Ser Ser Asp
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<210> 33
<211> 24
<212> PRT
<213> Influenza A virus

<400> 33

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Cys Asn Asp Ser Ser Asp
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<210> 34
<211> 46
<212> PRT
<213> Influenza A virus

<400> 34

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser
1 5 10 15

Arg Ser Asn Asp Ser Ser Asp Ser Leu Leu Thr Glu Val Glu Thr Pro
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Ile Arg Asn Glu Trp Gly Ser Arg Ser Asn Asp Ser Ser Asp
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<210> 35
<211> 69
<212> PRT
<213> Influenza A virus

<400> 35

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser
1 5 10 15

Arg Ser Asn Asp Ser Ser Asp Ser Leu Leu Thr Glu Val Glu Thr Pro
20 25 30

Ile Arg Asn Glu Trp Gly Ser Arg Ser Asn Asp Ser Ser Asp Ser Leu
35 40 45

Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg Ser
50 55 60

Asn Asp Ser Ser Asp
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<211> 46
<212> PRT
<213> Influenza A virus

<400> 36

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala
1 5 10 15

Arg Ala Asn Asp Ser Ser Asp Ser Leu Leu Thr Glu Val Glu Thr Pro
20 25 30

Ile Arg Asn Glu Trp Gly Ala Arg Ala Asn Asp Ser Ser Asp
35 40 45

<210> 37
<211> 69
<212> PRT
<213> Influenza A virus

<400> 37

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala
1 5 10 15

Arg Ala Asn Asp Ser Ser Asp Ser Leu Leu Thr Glu Val Glu Thr Pro
20 25 30

Ile Arg Asn Glu Trp Gly Ala Arg Ala Asn Asp Ser Ser Asp Ser Leu
35 40 45

Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala Arg Ala
50 55 60

Asn Asp Ser Ser Asp
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<210> 38
<211> 19
<212> PRT
<213> Influenza A virus

<400> 38

Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg Cys Asn Asp
1 5 10 15

Ser Ser Asp

<210> 39
<211> 38
<212> PRT
<213> Influenza A virus

<400> 39

Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg Cys Asn Asp
1 5 10 15

Ser Ser Asp Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg
20 25 30

Cys Asn Asp Ser Ser Asp
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<210> 40
<211> 57
<212> PRT
<213> Influenza A virus

<400> 40

Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg Cys Asn Asp
1 5 10 15

Ser Ser Asp Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg
20 25 30

Cys Asn Asp Ser Ser Asp Glu Val Glu Thr Pro Ile Arg Asn Glu Trp
35 40 45

Gly Ser Arg Cys Asn Asp Ser Ser Asp
50 55

<210> 41

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<211> 23
<212> PRT
<213> Influenza A virus

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa at position 1 is methionine or absent. If methionine then
      Xaa in positions 2 through 8 are not absent

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa at position 2 is serine or absent. If serine then Xaa in
      positions 3 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa at position 3 is leucine or absent. If leucine then Xaa
      in
      positions 4 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa at position 4 is leucine or absent. If leucine then Xaa
      in
      positions 5 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa at position 5 is threonine or absent. If threonine then
      Xaa
      in positions 6 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa at position 6 is glutamic acid or absent. If glutamic
      acid
      then Xaa in positions 7 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa at position 7 is valine or absent. If valine then Xaa in
      position 8 is not absent.

<220>
<221> misc_feature
<222> (8)..(8)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> Xaa at position 15 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa at position 16 is glycine or absent. If glycine then Xaa
      in
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position 15 is not absent.

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<220>
<221> MISC_FEATURE
<222> (17)..(17)
<223> Xaa at position 17 is absent or present, if present Xaa in
      position 17 is cysteine, serine or alanine.  If Xaa in
      position
      17 is present then positions 15 through 16 are not absent.

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> Xaa at position 18 is arginine or absent.  If arginine then
      Xaa
      in positions 15 through 17 are not absent.

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa at position 19 is absent or present, if present Xaa in
      position 19 is cysteine, serine or alanine.  If Xaa in
      position
      19 is present then positions 15 through 18 are not absent.

<220>
<221> MISC_FEATURE
<222> (20)..(20)
<223> Xaa at position 20 is asparagine or absent.  If asparagine
      then
      Xaa in positions 15 through 19 are not absent.

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa at position 21 is aspartic acid or absent.  If aspartic
      acid
      then Xaa in positions 15 through 20 are not absent.

<220>
<221> MISC_FEATURE
<222> (22)..(22)
<223> Xaa at position 22 is serine or absent.  If serine then Xaa in
      positions 15 through 21 are not absent.

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> Xaa at position 23 is serine or absent.  If serine then Xaa in
      positions 15 through 22 are not absent.

<400> 41

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Pro Ile Arg Asn Glu Xaa Xaa
1           5           10          15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 42
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<212> PRT
<213> Influenza A virus

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<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa at position 1 is methionine or absent. If methionine then
Xaa in positions 2 through 8 are not absent

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa at position 2 is serine or absent. If serine then Xaa in
positions 3 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa at position 3 is leucine or absent. If leucine then Xaa
in
positions 4 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa at position 4 is leucine or absent. If leucine then Xaa
in
positions 5 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa at position 5 is threonine or absent. If threonine then
Xaa
in positions 6 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa at position 6 is glutamic acid or absent. If glutamic
acid
then Xaa in positions 7 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa at position 7 is valine or absent. If valine then Xaa in
position 8 is not absent.

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa at position 8 is glutamic acid or absent.

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> Xaa at position 15 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa at position 16 is glycine or absent. If glycine then Xaa
in
position 15 is not absent.

<220>
<221> MISC_FEATURE
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<222> (17)..(17)
<223> Xaa at position 17 is absent or present, if present Xaa in
      position 17 is cysteine, serine or alanine.  If Xaa in
      position
      17 is present then positions 15 through 16 are not absent.

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> Xaa at position 18 is arginine or absent.  If arginine then
      Xaa
      in positions 15 through 17 are not absent.

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa at position 19 is absent or present, if present Xaa in
      position 19 is cysteine, serine or alanine.  If Xaa in
      position
      19 is present then positions 15 through 18 are not absent.

<220>
<221> MISC_FEATURE
<222> (20)..(20)
<223> Xaa at position 20 is asparagine or absent.  If asparagine
      then
      Xaa in positions 15 through 19 are not absent.

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa at position 21 is aspartic acid or absent.  If aspartic
      acid
      then Xaa in positions 15 through 20 are not absent.

<220>
<221> MISC_FEATURE
<222> (22)..(22)
<223> Xaa at position 22 is serine or absent.  If serine then Xaa in
      positions 15 through 21 are not absent.

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> Xaa at position 23 is serine or absent.  If serine then Xaa in
      positions 15 through 22 are not absent.

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa at position 24 is aspartic acid or absent.  If aspartic
      acid
      then Xaa in positions 15 through 23 are not absent.

<220>
<221> MISC_FEATURE
<222> (25)..(25)
<223> Xaa at position 25 is serine or absent.  If serine then Xaa in
      positions 26 through 31 are not absent

<220>
<221> MISC_FEATURE
<222> (26)..(26)
<223> Xaa at position 26 is leucine or absent.  If serine then Xaa
      in
      positions 27 through 31 are not absent
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<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa at position 27 is leucine or absent. If leucine then Xaa
in
positions 28 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> Xaa at position 28 is threonine or absent. If threonine than
Xaa
in positions 29 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (29)..(29)
<223> Xaa at position 29 is glutamic acid or absent. If glutamic
acid
then Xaa in positions 30 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa at position 30 is valine or absent. If valine then Xaa in
position 31 is not absent.

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa at position 31 is glutamic acid or absent.

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa at position 38 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa at position 39 is glycine or absent. If glycine then Xaa
in
position 38 is not absent.

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa at position 40 is absent or present, if present Xaa in
position 40 is cysteine, serine or alanine. If Xaa in
position
40 is present then positions 38 through 39 are not absent.

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa at position 41 is arginine or absent. If arginine then
Xaa
in positions 38 through 40 are not absent

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa at position 42 is absent or present, if present Xaa in
position 42 is cysteine, serine or alanine. If Xaa in
position

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42 is present then positions 38 through 41 are not absent.

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> Xaa at position 43 is asparagine or absent. If asparagine then Xaa in positions 38 through 42 are not absent.

<220>
<221> MISC_FEATURE
<222> (44)..(44)
<223> Xaa at position 44 is aspartic acid or absent. If aspartic acid then Xaa in positions 38 through 43 are not absent.

<220>
<221> misc_feature
<222> (45)..(45)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> MISC_FEATURE
<222> (46)..(46)
<223> Xaa at position 46 is serine or absent. If serine then Xaa in positions 38 through 45 are not absent.

<220>
<221> MISC_FEATURE
<222> (47)..(47)
<223> Xaa at position 47 is aspartic acid or absent. If aspartic acid then Xaa in positions 38 through 46 are not absent.

<400> 42

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Pro Ile Arg Asn Glu Xaa Xaa
1 5 10 15

Xaa Thr
20 25 30

Pro Ile Arg Asn Glu Xaa
35 40 45

<210> 43
<211> 70
<212> PRT
<213> Influenza A virus

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa at position 1 is methionine or absent. If methionine then Xaa in positions 2 through 8 are not absent

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa at position 2 is serine or absent. If serine then Xaa in positions 3 through 8 are not absent.

```

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa at position 3 is leucine or absent. If leucine then Xaa
in
    positions 4 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa at position 4 is leucine or absent. If leucine then Xaa
in
    positions 5 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa at position 5 is threonine or absent. If threonine then
Xaa
    in positions 6 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa at position 6 is glutamic acid or absent. If glutamic
acid
    then Xaa in positions 7 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa at position 7 is valine or absent. If valine then Xaa in
position 8 is not absent.

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa at position 8 is glutamic acid or absent.

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> Xaa at position 15 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa at position 16 is glycine or absent. If glycine then Xaa
in
    position 15 is not absent.

<220>
<221> MISC_FEATURE
<222> (17)..(17)
<223> Xaa at position 17 is absent or present, if present Xaa in
position 17 is cysteine, serine or alanine. If Xaa in
    position
    17 is present then positions 15 through 16 are not absent.

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> Xaa at position 18 is arginine or absent. If arginine then
Xaa
    in positions 15 through 17 are not absent.

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<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa at position 19 is absent or present, if present Xaa in
      position 19 is cysteine, serine or alanine.  If Xaa in
      position
      19 is present then positions 15 through 18 are not absent.

<220>
<221> MISC_FEATURE
<222> (20)..(20)
<223> Xaa at position 20 is asparagine or absent.  If asparagine
      then
      Xaa in positions 15 through 19 are not absent.

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa at position 21 is aspartic acid or absent.  If aspartic
      acid
      then Xaa in positions 15 through 20 are not absent.

<220>
<221> MISC_FEATURE
<222> (22)..(22)
<223> Xaa at position 22 is serine or absent.  If serine then Xaa in
      positions 15 through 21 are not absent.

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> Xaa at position 23 is serine or absent.  If serine then Xaa in
      positions 15 through 22 are not absent.

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa at position 24 is aspartic acid or absent.  If aspartic
      acid
      then Xaa in positions 15 through 23 are not absent.

<220>
<221> MISC_FEATURE
<222> (25)..(25)
<223> Xaa at position 25 is serine or absent.  If serine then Xaa in
      positions 26 through 31 are not absent

<220>
<221> MISC_FEATURE
<222> (26)..(26)
<223> Xaa at position 26 is leucine or absent.  If leucine then Xaa
      in
      positions 27 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa at position 27 is leucine or absent.  If leucine then Xaa
      in
      positions 28 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> Xaa at position 28 is threonine or absent.  If threonine than
      Xaa
```

in positions 29 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (29)..(29)
<223> Xaa at position 29 is glutamic acid or absent. If glutamic acid then Xaa in positions 30 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa at position 30 is valine or absent. If valine then Xaa in position 31 is not absent.

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa at position 31 is glutamic acid or absent.

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa at position 38 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa at position 39 is glycine or absent. If glycine then Xaa in position 38 is not absent.

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa at position 40 is absent or present, if present Xaa in position 40 is cysteine, serine or alanine. If Xaa in position 40 is present then positions 38 through 39 are not absent.

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa at position 41 is arginine or absent. If arginine then Xaa in positions 38 through 40 are not absent.

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa at position 42 is absent or present, if present Xaa in position 42 is cysteine, serine or alanine. If Xaa in position 42 is present then positions 38 through 41 are not absent.

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> Xaa at position 43 is asparagine or absent. If asparagine then Xaa in positions 38 through 42 are not absent.

<220>
<221> MISC_FEATURE
<222> (44)..(44)

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<223> Xaa at position 44 is aspartic acid or absent. If aspartic acid then Xaa in positions 38 through 43 are not absent.

<220>
<221> MISC_FEATURE
<222> (45)..(45)
<223> Xaa at position 45 is serine or absent. If serine then Xaa in positions 38 through 44 are not absent.

<220>
<221> MISC_FEATURE
<222> (46)..(46)
<223> Xaa at position 46 is serine or absent. If serine then Xaa in positions 38 through 45 are not absent.

<220>
<221> MISC_FEATURE
<222> (47)..(47)
<223> Xaa at position 47 is aspartic acid or absent. If aspartic acid then Xaa in positions 38 through 46 are not absent.

<220>
<221> MISC_FEATURE
<222> (48)..(48)
<223> Xaa at position 48 is serine or absent. If serine then Xaa in positions 49 through 54 are not absent.

<220>
<221> MISC_FEATURE
<222> (49)..(49)
<223> Xaa at position 49 is leucine or absent. If leucine then Xaa in positions 50 through 54 are not absent.

<220>
<221> MISC_FEATURE
<222> (50)..(50)
<223> Xaa at position 50 is leucine or absent. If leucine then Xaa in positions 51 through 54 are not absent.

<220>
<221> MISC_FEATURE
<222> (51)..(51)
<223> Xaa at position 51 is threonine or absent. If threonine then Xaa in positions 52 through 54 are not absent.

<220>
<221> MISC_FEATURE
<222> (52)..(52)
<223> Xaa at position 52 is glutamic acid or absent. If glutamic acid then Xaa in positions 53 through 54 are not absent.

<220>
<221> MISC_FEATURE
<222> (53)..(53)
<223> Xaa at position 53 is valine or absent. If valine then Xaa in position 54 is not absent.

<220>
<221> MISC_FEATURE
<222> (54)..(54)
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<223> Xaa at position 54 is glutamic acid or absent

<220>
<221> MISC_FEATURE
<222> (61)..(61)
<223> Xaa at position 61 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (62)..(62)
<223> Xaa at position 62 is glycine or absent. If glycine then Xaa
in
position 61 is not absent.

<220>
<221> MISC_FEATURE
<222> (63)..(63)
<223> Xaa at position 63 is absent or present, if present Xaa in
position 63 is cysteine, serine or alanine. If Xaa in
position
63 is present then positions 61 through 62 are not absent.

<220>
<221> MISC_FEATURE
<222> (64)..(64)
<223> Xaa at position 64 is arginine or absent. If arginine then
Xaa
in positions 61 through 63 are not absent

<220>
<221> MISC_FEATURE
<222> (65)..(65)
<223> Xaa at position 65 is absent or present, if present Xaa in
position 65 is cysteine, serine or alanine. If Xaa in
position
65 is present then positions 61 through 64 are not absent.

<220>
<221> MISC_FEATURE
<222> (66)..(66)
<223> Xaa at position 66 is asparagine or absent. If asparagine
then
Xaa in positions 61 through 65 are not absent.

<220>
<221> MISC_FEATURE
<222> (67)..(67)
<223> Xaa at position 67 is aspartic acid or absent. If aspartic
acid
then Xaa in positions 61 through 66 are not absent.

<220>
<221> MISC_FEATURE
<222> (68)..(68)
<223> Xaa at position 68 is serine or absent. If serine then Xaa in
positions 61 through 67 are not absent.

<220>
<221> MISC_FEATURE
<222> (69)..(69)
<223> Xaa at position 69 is serine or absent. If serine then Xaa in
positions 61 through 68 are not absent.

<220>
<221> MISC_FEATURE
<222> (70)..(70)
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<223> Xaa at position 70 is aspartic acid or absent. If aspartic acid then Xaa in positions 61 through 69 are not absent.

<400> 43

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Pro Ile Arg Asn Glu Xaa Xaa
1 5 10 15

Xaa Thr
20 25 30

Pro Ile Arg Asn Glu Xaa
35 40 45

Xaa Xaa Xaa Xaa Xaa Xaa Thr Pro Ile Arg Asn Glu Xaa Xaa Xaa Xaa
50 55 60

Xaa Xaa Xaa Xaa Xaa Xaa
65 70

<210> 44

<211> 24

<212> PRT

<213> Influenza A virus

<220>

<221> MISC_FEATURE

<222> (1)..(1)

<223> Xaa at position 1 is methionine or absent. If methionine then Xaa in position 2 through 8 are not absent.

<220>

<221> MISC_FEATURE

<222> (2)..(2)

<223> Xaa at position 2 is serine or absent. If serine then Xaa in position 3 through 8 are not absent.

<220>

<221> MISC_FEATURE

<222> (3)..(3)

<223> Xaa at position 3 is leucine or absent. If leucine then Xaa in position 4 through 8 are not absent.

<220>

<221> MISC_FEATURE

<222> (4)..(4)

<223> Xaa at position 4 is leucine or absent. If leucine then Xaa in position 5 through 8 are not absent.

<220>

<221> MISC_FEATURE

<222> (5)..(5)

<223> Xaa at position 4 is threonine or proline or absent. If threonine or proline then Xaa in position 6 through 8 are not absent.

<220>

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<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa at position 6 is glutamic acid or absent. If glutamic
acid
      then Xaa in position 7 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa at position 7 is valine or absent. If valine then Xaa in
position 8 is not absent.

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa at position 8 is glutamic acid or aspartic acid or absent.

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa at position 10 is proline, leucine or histidine.

<220>
<221> MISC_FEATURE
<222> (11)..(11)
<223> Xaa at position 11 is isoleucine or threonine.

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa at position 13 is asparagine or serine.

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa at position 14 is glutamic acid or glycine.

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> Xaa at position 15 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa at position 16 is glycine, glutamic acid or absent. If
glycine or glutamic acid then Xaa in position 16 is not
absent.

<220>
<221> MISC_FEATURE
<222> (17)..(17)
<223> Xaa at position 17 is absent or present, if present Xaa in
position 17 is cysteine, serine or alanine. If Xaa in
position
      17 is present then positions 15 through 16 are not absent.

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> Xaa at position 18 arginine, lysine or absent. If arginine or
lysine then Xaa in positions 15 through 17 are not absent.

<220>
<221> MISC_FEATURE
<222> (19)..(19)
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<223> Xaa at position 19 is absent or present, if present Xaa in
      position 19 is cysteine, serine or alanine.  If Xaa is
      position
      19 is present then positions 15 through 18 are not absent.

<220>
<221> MISC_FEATURE
<222> (20)..(20)
<223> Xaa at position 20 is asparagine, serine, glycine or absent.
      If
      asparagine or serine or glycine then Xaa is positions 15
      through
      19 are not absent.

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa at position 21 is aspartic acid, glycine or absent.  If
      aspartic acid or glycine then Xaa is positions 15 through 20
      are
      not absent.

<220>
<221> MISC_FEATURE
<222> (22)..(22)
<223> Xaa at position 22 is serine or absent.  If serine then Xaa is
      positions 15 through 21 are not absent.

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> Xaa at position 23 is serine or absent.  If serine then Xaa is
      positions 15 through 22 are not absent.

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa at position 24 is aspartic acid or absent.  If aspartic
      acid
      then Xaa is positions 15 through 23 are not absent.

<400> 44

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Arg Xaa Xaa Xaa Xaa
1           5           10          15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20

<210> 45
<211> 47
<212> PRT
<213> Influenza A virus

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa at position 1 is methionine or absent.  If methionine then
      Xaa in position 2 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (2)..(2)

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<223> Xaa at position 2 is serine or absent. If serine then Xaa in
      position 3 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa at position 3 is leucine or absent. If leucine then Xaa
      in
      position 4 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa at position 4 is leucine or absent. If leucine then Xaa
      in
      position 5 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa at position 4 is threonine or absent. If threonine then
      Xaa
      in position 6 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa at position 6 is glutamic acid or absent. If glutamic
      acid
      then Xaa in position 7 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa at position 7 is valine or absent. If valine then Xaa in
      position 8 is not absent.

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa at position 8 is glutamic acid or aspartic acid or absent.

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa at position 10 is proline, leucine or histidine.

<220>
<221> MISC_FEATURE
<222> (11)..(11)
<223> Xaa at position 11 is isoleucine or threonine.

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa at position 13 is asparagine or serine.

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa at position 14 is glutamic acid or glycine.

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> Xaa at position 15 is tryptophan or absent.
```

```

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa at position 16 is glycine, glutamic acid or absent. If
      glycine or glutamic acid then Xaa in position 16 is not
      absent.

<220>
<221> MISC_FEATURE
<222> (17)..(17)
<223> Xaa at position 17 is absent or present, if present Xaa in
      position 17 is cysteine, serine or alanine. If Xaa in
      position
      17 is present then positions 15 through 16 are not absent.

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> Xaa at position 18 arginine, lysine or absent. If arginine or
      lysine then Xaa in positions 15 through 17 are not absent.

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa at position 19 is absent or present, if present Xaa in
      position 19 is cysteine, serine or alanine. If Xaa is
      position
      19 is present then positions 15 through 18 are not absent.

<220>
<221> MISC_FEATURE
<222> (20)..(20)
<223> Xaa at position 20 is asparagine, serine or glycine or absent.
      If asparagine or serine then Xaa is positions 15 through 19
      are
      not absent.

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa at position 21 is aspartic acid, glycine or absent. If
      aspartic acid or glycine then Xaa is positions 15 through 20
      are
      not absent.

<220>
<221> MISC_FEATURE
<222> (22)..(22)
<223> Xaa at position 22 is serine or absent. If serine then Xaa is
      positions 15 through 21 are not absent.

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> Xaa at position 23 is serine or absent. If serine then Xaa is
      positions 15 through 22 are not absent.

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa at position 24 is aspartic acid or absent. If aspartic
      acid
      then Xaa is positions 15 through 23 are not absent.

<220>

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<221> MISC_FEATURE
<222> (25)..(25)
<223> Xaa at position 25 is serine or absent. If serine then Xaa in
positions 26 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (26)..(26)
<223> Xaa at position 26 is leucine or absent. If leucine then Xaa
in
positions 27 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa at position 27 is leucine or absent. If leucine then Xaa
in
positions 28 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> Xaa at position 28 is threonine, proline or absent. If
threonine
or proline then Xaa in positions 29 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (29)..(29)
<223> Xaa at position 29 is glutamic acid or absent. If glutamic
acid
then Xaa in positions 30 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa at position 30 is valine or absent. If valine then Xaa in
position 31 is not absent.

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa at position 31 is glutamic acid or aspartic acid or
absent.

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa at position 33 is proline, leucine or histidine.

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa at position 34 is isoleucine or threonine

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa at position 36 is asparagine or serine.

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa at position 37 is glutamic acid or glycine.

<220>
```

```

<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa at position 38 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa at position 39 is glycine, glutamic acid or absent. If
      glycine or glutamic acid then Xaa in position 38 is not
      absent.

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa at position 40 is absent of present, if present Xaa in
      position 40 is cysteine, serine or alanine. If Xaa in
      position
          40 is present then positions 38 through 39 are not absent.

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa at position 41 is arginine, lysine or absent. If arginine
      or
          lysine than Xaa in positions 38 through 40 are not absent.

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa at position 42 is absent or present, if present Xaa in
      position 42 is cysteine, serine or alanine. If Xaa in
      position
          42 is present then positions 38 through 41 are not absent.

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> Xaa at position 43 is asparagine, serine or absent. If
      asparagine or serine then Xaa in positions 38 through 42 are
      not
          absent.

<220>
<221> MISC_FEATURE
<222> (44)..(44)
<223> Xaa at position 44 is aspartic acid, glycine or absent. If
      aspartic acid or glycine then Xaa in positions 38 through 43
      are
          not absent.

<220>
<221> MISC_FEATURE
<222> (45)..(45)
<223> Xaa at position 45 is serine or absent. If serine then Xaa in
      positions 38 through 44 are not absent.

<220>
<221> MISC_FEATURE
<222> (46)..(46)
<223> Xaa at position 46 is serine or absent. If serine then Xaa in
      positions 38 through 45 are not absent.

<220>
<221> MISC_FEATURE
<222> (47)..(47)

```

<223> Xaa at position 47 is aspartic acid or absent. If aspartic acid then Xaa in positions 38 through 46 are not absent.

<400> 45

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Arg Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Thr
20 25 30

Xaa Xaa Arg Xaa
35 40 45

<210> 46
<211> 70
<212> PRT
<213> Influenza A virus

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa at position 1 is methionine or absent. If methionine then Xaa in position 2 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa at position 2 is serine or absent. If serine then Xaa in position 3 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa at position 3 is leucine or absent. If leucine then Xaa in position 4 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa at position 4 is leucine or absent. If leucine then Xaa in position 5 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa at position 5 is threonine or absent. If threonine then Xaa in position 6 through 8 are not absent.

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa at position 6 is glutamic acid or absent. If glutamic acid then Xaa in position 7 through 8 are not absent.

<220>
<221> MISC_FEATURE

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<222> (7)..(7)
<223> Xaa at position 7 is valine or absent. If valine then Xaa in
position 8 is not absent.

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa at position 8 is glutamic acid or absent.

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa at position 10 is proline, leucine or histidine.

<220>
<221> MISC_FEATURE
<222> (11)..(11)
<223> Xaa at position 11 is isoleucine or threonine.

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa at position 13 is asparagine or serine.

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa at position 14 is glutamic acid or glycine.

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> Xaa at position 15 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa at position 16 is glycine, glutamic acid or absent. If
glycine or glutamic acid then Xaa in position 16 is not
absent.

<220>
<221> MISC_FEATURE
<222> (17)..(17)
<223> Xaa at position 17 is absent or present, if present Xaa in
position 17 is cysteine, serine or alanine. If Xaa in
position
17 is present then positions 15 through 16 are not absent.

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> Xaa at position 18 arginine, lysine or absent. If arginine or
lysine then Xaa in positions 15 through 17 are not absent.

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa at position 19 is absent or present, if present Xaa in
position 19 is cysteine, serine or alanine. If Xaa is
position
19 is present then positions 15 through 18 are not absent.

<220>
<221> MISC_FEATURE
<222> (20)..(20)
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<223> Xaa at position 20 is asparagine, serine, glycine or absent.  
If  
asparagine or serine then Xaa is positions 15 through 19 are  
not  
absent.

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa at position 21 is aspartic acid, glycine or absent. If  
aspartic acid or glycine then Xaa is positions 15 through 20  
are  
not absent.

<220>
<221> MISC_FEATURE
<222> (22)..(22)
<223> Xaa at position 22 is serine or absent. If serine then Xaa is  
positions 15 through 21 are not absent.

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> Xaa at position 23 is serine or absent. If serine then Xaa is  
positions 15 through 22 are not absent.

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa at position 24 is aspartic acid or absent. If aspartic  
acid  
then Xaa is positions 15 through 23 are not absent.

<220>
<221> MISC_FEATURE
<222> (25)..(25)
<223> Xaa at position 25 is serine or absent. If serine then Xaa in  
positions 26 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (26)..(26)
<223> Xaa at position 26 is leucine or absent. If leucine then Xaa  
in  
positions 27 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa at position 27 is leucine or absent. If leucine then Xaa  
in  
positions 28 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> Xaa at position 28 is threonine, proline or absent. If  
threonine  
or proline then Xaa in positions 29 through 31 are not absent.

<220>
<221> MISC_FEATURE
<222> (29)..(29)
<223> Xaa at position 29 is glutamic acid or absent. If glutamic  
acid  
then Xaa in positions 30 through 31 are not absent.
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<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa at position 30 is valine or absent. If valine then Xaa in
position 31 is not absent.

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa at position 31 is glutamic acid or aspartic acid or
absent.

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa at position 33 is proline, leucine or histidine.

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa at position 34 is isoleucine or threonine

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa at position 36 is asparagine or serine.

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa at position 37 is glutamic acid or glycine.

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa at position 38 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa at position 39 is glycine, glutamic acid or absent. If
glycine or glutamic acid then Xaa in position 38 is not
absent.

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa at position 40 is absent or present, if present Xaa in
position 40 is cysteine, serine or alanine. If Xaa in
position
40 is present then positions 38 through 39 are not absent.

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa at position 41 is arginine, lysine or absent. If arginine
or
lysine than Xaa in positions 38 through 40 are not absent.

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa at position 42 is absent or present, if present Xaa in
position 42 is cysteine, serine or alanine. If Xaa in
position
```

42 is present then positions 38 through 41 are not absent.

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> Xaa at position 43 is asparagine, serine, glycine or absent.
If
asparagine or serine or glycine then Xaa in positions 38
through
42 are not absent.

<220>
<221> MISC_FEATURE
<222> (44)..(44)
<223> Xaa at position 44 is aspartic acid, glycine or absent. If
aspartic acid or glycine then Xaa in positions 38 through 43
are
not absent.

<220>
<221> MISC_FEATURE
<222> (45)..(45)
<223> Xaa at position 45 is serine or absent. If serine then Xaa in
positions 38 through 44 are not absent.

<220>
<221> MISC_FEATURE
<222> (46)..(46)
<223> Xaa at position 46 is serine or absent. If serine then Xaa in
positions 38 through 45 are not absent.

<220>
<221> MISC_FEATURE
<222> (47)..(47)
<223> Xaa at position 47 is aspartic acid or absent. If aspartic
acid
then Xaa in positions 38 through 46 are not absent.

<220>
<221> MISC_FEATURE
<222> (48)..(48)
<223> Xaa at position 48 is serine or absent. If serine then Xaa in
positions 49 through 54 are not absent.

<220>
<221> MISC_FEATURE
<222> (49)..(49)
<223> Xaa at position 49 is leucine or absent. If leucine then Xaa
in
positions 50 through 54 are not absent.

<220>
<221> MISC_FEATURE
<222> (50)..(50)
<223> Xaa at position 50 is leucine or absent. If leucine then Xaa
in
positions 51 through 54 are not absent.

<220>
<221> MISC_FEATURE
<222> (51)..(51)
<223> Xaa at position 51 is threonine, proline or absent. If
threonine
or proline then Xaa in positions 52 through 54 are not absent.

<220>

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<221> MISC_FEATURE
<222> (52)..(52)
<223> Xaa at position 52 is glutamic acid or absent. If glutamic
acid
      then Xaa in positions 53 through 54 are not absent.

<220>
<221> MISC_FEATURE
<222> (53)..(53)
<223> Xaa at position 53 is valine or absent. If valine then Xaa in
position 54 is not absent.

<220>
<221> MISC_FEATURE
<222> (54)..(54)
<223> Xaa at position 54 is glutamic acid or aspartic acid or absent

<220>
<221> MISC_FEATURE
<222> (56)..(56)
<223> Xaa at position 56 is proline, leucine or histidine.

<220>
<221> MISC_FEATURE
<222> (57)..(57)
<223> Xaa at position 57 is isoleucine or threonine.

<220>
<221> MISC_FEATURE
<222> (59)..(59)
<223> Xaa at position 59 is asparagine or serine.

<220>
<221> MISC_FEATURE
<222> (60)..(60)
<223> Xaa at position 60 is glutamic acid or glycine.

<220>
<221> MISC_FEATURE
<222> (61)..(61)
<223> Xaa at position 61 is tryptophan or absent.

<220>
<221> MISC_FEATURE
<222> (62)..(62)
<223> Xaa at position 62 is glycine, glutamic acid or absent. If
glycine or glutamic acid then Xaa in position 61 is not
absent.

<220>
<221> MISC_FEATURE
<222> (63)..(63)
<223> Xaa at position 63 is absent of present, if present Xaa in
position 63 is cysteine, serine or alanine. If Xaa in
position
      63 is present then positions 61 through 62 are not absent.

<220>
<221> MISC_FEATURE
<222> (64)..(64)
<223> Xaa at position 64 is arginine, lysine or absent. If arginine
or
      lysine than Xaa in positions 61 through 63 are not absent.

<220>
<221> MISC_FEATURE
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<222> (65)..(65)
<223> Xaa at position 65 is absent or present, if present Xaa in
      position 65 is cysteine, serine or alanine. If Xaa in
      position
      65 is present then positions 61 through 64 are not absent.

<220>
<221> MISC_FEATURE
<222> (66)..(66)
<223> Xaa at position 66 is asparagine, serine, glycine or absent.
If
      asparagine or serine or glycine then Xaa in positions 61
      through
      65 are not absent.

<220>
<221> MISC_FEATURE
<222> (67)..(67)
<223> Xaa at position 67 is aspartic acid, glycine or absent. If
      aspartic acid or glycine then Xaa in positions 61 through 66
      are
      not absent.

<220>
<221> MISC_FEATURE
<222> (68)..(68)
<223> Xaa at position 68 is serine or absent. If serine then Xaa in
      positions 61 through 67 are not absent.

<220>
<221> MISC_FEATURE
<222> (69)..(69)
<223> Xaa at position 69 is serine or absent. If serine then Xaa in
      positions 61 through 68 are not absent.

<220>
<221> MISC_FEATURE
<222> (70)..(70)
<223> Xaa at position 70 is aspartic acid or absent. If aspartic
      acid
      then Xaa in positions 61 through 69 are not absent.

<400> 46

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Arg Xaa Xaa Xaa Xaa
1           5           10          15

Xaa Thr
20          25          30

Xaa Xaa Arg Xaa Xaa
35          40          45

Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Arg Xaa Xaa Xaa Xaa Xaa Xaa
50          55          60

Xaa Xaa Xaa Xaa Xaa Xaa
65          70

<210> 47
<211> 17

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<212> PRT

<213> Influenza B virus

<400> 47

Asn Asn Ala Thr Phe Asn Tyr Thr Asn Val Asn Pro Ile Ser His Ile
1 5 10 15

Arg

<210> 48

<211> 142

<212> PRT

<213> Yersinia pestis

<400> 48

Asp Ile Leu Lys Val Ile Val Asp Ser Met Asn His His Gly Asp Ala
1 5 10 15

Arg Ser Lys Leu Arg Glu Glu Leu Ala Glu Leu Thr Ala Glu Leu Lys
20 25 30

Ile Tyr Ser Val Ile Gln Ala Glu Ile Asn Lys His Leu Ser Ser Ser
35 40 45

Gly Thr Ile Asn Ile His Asp Lys Ser Ile Asn Leu Met Asp Lys Asn
50 55 60

Leu Tyr Gly Tyr Thr Asp Glu Glu Ile Phe Lys Ala Ser Ala Glu Tyr
65 70 75 80

Lys Ile Leu Glu Lys Met Pro Gln Thr Thr Ile Gln Val Asp Gly Ser
85 90 95

Glu Lys Lys Ile Val Ser Ile Lys Asp Phe Leu Gly Ser Glu Asn Lys
100 105 110

Arg Thr Gly Ala Leu Gly Asn Leu Lys Asn Ser Tyr Ser Tyr Asn Lys
115 120 125

Asp Asn Asn Glu Leu Ser His Phe Ala Thr Thr Cys Ser Asp
130 135 140

<210> 49

<211> 19

<212> PRT

<213> Haemophilus influenzae

<400> 49

Cys Ser Ser Ser Asn Asn Asp Ala Ala Gly Asn Gly Ala Ala Gln Phe
1 5 10 15

Gly Gly Tyr

<210> 50
<211> 11
<212> PRT
<213> *Haemophilus influenzae*

<400> 50

Asn Lys Leu Gly Thr Val Ser Tyr Gly Glu Glu
1 5 10

<210> 51
<211> 16
<212> PRT
<213> *Haemophilus influenzae*

<400> 51

Asn Asp Glu Ala Ala Tyr Ser Lys Asn Arg Arg Ala Val Leu Ala Tyr
1 5 10 15

<210> 52
<211> 28
<212> PRT
<213> *Moraxella catarrhalis*

<400> 52

Leu Asp Ile Glu Lys Asp Lys Lys Lys Arg Thr Asp Glu Gln Leu Gln
1 5 10 15

Ala Glu Leu Asp Asp Lys Tyr Ala Gly Lys Gly Tyr
20 25

<210> 53
<211> 28
<212> PRT
<213> *Moraxella catarrhalis*

<400> 53

Leu Asp Ile Glu Lys Asn Lys Lys Lys Arg Thr Glu Ala Glu Leu Gln
1 5 10 15

Ala Glu Leu Asp Asp Lys Tyr Ala Gly Lys Gly Tyr
20 25

<210> 54
<211> 28
<212> PRT
<213> *Moraxella catarrhalis*

<400> 54

Ile Asp Ile Glu Lys Lys Gly Lys Ile Arg Thr Glu Ala Glu Leu Leu
1 5 10 15

Ala Glu Leu Asn Lys Asp Tyr Pro Gly Gln Gly Tyr
20 25

<210> 55
<211> 25
<212> PRT
<213> *Porphyromonas gingivalis*

<400> 55

Gly Val Ser Pro Lys Val Cys Lys Asp Val Thr Val Glu Gly Ser Asn
1 5 10 15

Glu Phe Ala Pro Val Gln Asn Leu Thr
20 25

<210> 56
<211> 20
<212> PRT
<213> *Porphyromonas gingivalis*

<400> 56

Arg Ile Gln Ser Thr Trp Arg Gln Lys Thr Val Asp Leu Pro Ala Gly
1 5 10 15

Thr Lys Tyr Val
20

<210> 57
<211> 21
<212> PRT
<213> *Trypanosoma cruzi*

<400> 57

Lys Ala Ala Ile Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala
1 5 10 15

Ala Thr Ala Pro Ala
20

<210> 58
<211> 24
<212> PRT
<213> *Plasmodium falciparum*

<400> 58

Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro
1 5 10 15

Asn Ala Asn Pro Asn Val Asp Pro
20

<210> 59
<211> 20
<212> PRT
<213> Plasmodium falciparum

<400> 59

Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro
1 5 10 15

Asn Ala Asn Pro
20

<210> 60
<211> 20
<212> PRT
<213> Plasmodium falciparum

<400> 60

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Val Asp Pro
1 5 10 15

Asn Ala Asn Pro
20

<210> 61
<211> 28
<212> PRT
<213> Plasmodium falciparum

<400> 61

Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro
1 5 10 15

Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro
20 25

<210> 62
<211> 20
<212> PRT
<213> Plasmodium falciparum

<400> 62

Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
1 5 10 15

Asn Pro Asn Val
20

<210> 63
<211> 22
<212> PRT
<213> Plasmodium falciparum

<400> 63

Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
1 5 10 15

Asn Pro Asn Val Asp Pro
20

<210> 64
<211> 24
<212> PRT
<213> Plasmodium falciparum

<400> 64

Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala
1 5 10 15

Asn Pro Asn Val Asp Pro Asn Ala
20

<210> 65
<211> 18
<212> PRT
<213> Plasmodium falciparum

<400> 65

Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
1 5 10 15

Asn Val

<210> 66
<211> 20
<212> PRT
<213> Plasmodium falciparum

<400> 66

Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
1 5 10 15

Asn Val Asp Pro
20

<210> 67
<211> 22
<212> PRT
<213> Plasmodium falciparum

<400> 67

Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
1 5 10 15

Asn Val Asp Pro Asn Ala

<210> 68
 <211> 16
 <212> PRT
 <213> Plasmodium falciparum

 <400> 68

Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Val
 1 5 10 15

<210> 69
 <211> 18
 <212> PRT
 <213> Plasmodium falciparum

 <400> 69

Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Val
 1 5 10 15

Asp Pro

<210> 70
 <211> 20
 <212> PRT
 <213> Plasmodium falciparum

 <400> 70

Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Val
 1 5 10 15

Asp Pro Asn Ala
20

<210> 71
 <211> 19
 <212> PRT
 <213> Plasmodium vivax

 <400> 71

Gly Asp Arg Ala Asp Gly Gln Pro Ala Gly Asp Arg Ala Asp Gly Gln
 1 5 10 15

Pro Ala Gly

<210> 72
 <211> 18
 <212> PRT
 <213> Plasmodium vivax

 <400> 72

Arg Ala Asp Asp Arg Ala Ala Gly Gln Pro Ala Gly Asp Gly Gln Pro
1 5 10 15

Ala Gly

<210> 73
<211> 18
<212> PRT
<213> Plasmodium vivax

<400> 73

Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp Gln
1 5 10 15

Pro Gly

<210> 74
<211> 18
<212> PRT
<213> Plasmodium vivax

<400> 74

Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala Asp Asp Gln
1 5 10 15

Pro Gly

<210> 75
<211> 18
<212> PRT
<213> Plasmodium vivax

<400> 75

Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Asp Asn Gln
1 5 10 15

Pro Gly

<210> 76
<211> 18
<212> PRT
<213> Plasmodium vivax

<400> 76

Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Asp Asp Gln
1 5 10 15

Pro Gly

<210> 77

<211> 22

<212> PRT

<213> Plasmodium vivax

<400> 77

Ala Pro Gly Ala Asn Gln Glu Gly Gly Ala Ala Ala Pro Gly Ala Asn
1 5 10 15

Gln Glu Gly Gly Ala Ala
20

<210> 78

<211> 36

<212> PRT

<213> Plasmodium vivax

<400> 78

Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp Gln
1 5 10 15

Pro Gly Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala Asp
20 25 30

Asp Gln Pro Gly
35

<210> 79

<211> 16

<212> PRT

<213> Plasmodium berghei

<400> 79

Asp Pro Pro Pro Pro Asn Pro Asn Asp Pro Pro Pro Pro Asn Pro Asn
1 5 10 15

<210> 80

<211> 24

<212> PRT

<213> Plasmodium yoelii

<400> 80

Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly Ala Pro Gln Gly Pro Gly
1 5 10 15

Ala Pro Gln Gly Pro Gly Ala Pro
20

<210> 81

<211> 15

<212> PRT

<213> Streptococcus sobrinus

<400> 81

Lys Pro Arg Pro Ile Tyr Glu Ala Lys Leu Ala Gln Asn Gln Lys
1 5 10 15

<210> 82

<211> 16

<212> PRT

<213> *Streptococcus sobrinus*

<400> 82

Ala Lys Ala Asp Tyr Glu Ala Lys Leu Ala Gln Tyr Glu Lys Asp Leu
1 5 10 15

<210> 83

<211> 9

<212> PRT

<213> *Shigella flexneri*

<400> 83

Lys Asp Arg Thr Leu Ile Glu Gln Lys
1 5

<210> 84

<211> 15

<212> PRT

<213> *respiratory syncytial virus*

<400> 84

Cys Ser Ile Cys Ser Asn Asn Pro Thr Cys Trp Ala Ile Cys Lys
1 5 10 15

<210> 85

<211> 25

<212> PRT

<213> *Entamoeba histolytica*

<400> 85

Val Glu Cys Ala Ser Thr Val Cys Gln Asn Asp Asn Ser Cys Pro Ile
1 5 10 15

Ile Ala Asp Val Glu Lys Cys Asn Gln
20 25

<210> 86

<211> 34

<212> PRT

<213> *Schistosoma japonicum*

<400> 86

Asp Leu Gln Ser Glu Ile Ser Leu Ser Leu Glu Asn Gly Glu Leu Ile
1 5 10 15

Arg Arg Ala Lys Ser Ala Glu Ser Leu Ala Ser Glu Leu Gln Arg Arg
20 25 30

Val Asp

<210> 87
<211> 34
<212> PRT
<213> Schistosoma mansoni

<400> 87

Asp Leu Gln Ser Glu Ile Ser Leu Ser Leu Glu Asn Ser Glu Leu Ile
1 5 10 15

Arg Arg Ala Lys Ala Ala Glu Ser Leu Ala Ser Asp Leu Gln Arg Arg
20 25 30

Val Asp

<210> 88
<211> 26
<212> PRT
<213> Bovine Inhibin

<400> 88

Ser Thr Pro Pro Leu Pro Trp Pro Trp Ser Pro Ala Ala Leu Arg Leu
1 5 10 15

Leu Gln Arg Pro Pro Glu Glu Pro Ala Ala
20 25

<210> 89
<211> 17
<212> PRT
<213> Ebola virus

<400> 89

Ala Thr Gln Val Glu Gln His His Arg Arg Thr Asp Asn Asp Ser Thr
1 5 10 15

Ala

<210> 90
<211> 17
<212> PRT
<213> Ebola virus

<400> 90

His Asn Thr Pro Val Tyr Lys Leu Asp Ile Ser Glu Ala Thr Gln Val
1 5 10 15

Glu

<210> 91
<211> 17
<212> PRT
<213> Ebola virus

<400> 91

Gly Lys Leu Gly Leu Ile Thr Asn Thr Ile Ala Gly Val Ala Val Leu
1 5 10 15

Ile

<210> 92
<211> 14
<212> PRT
<213> Escherichia coli

<400> 92

Cys Cys Glu Leu Cys Cys Tyr Pro Ala Cys Ala Gly Cys Asn
1 5 10

<210> 93
<211> 18
<212> PRT
<213> Escherichia coli

<400> 93

Asn Thr Phe Tyr Cys Cys Glu Leu Cys Cys Tyr Pro Ala Cys Ala Gly
1 5 10 15

Cys Asn

<210> 94
<211> 18
<212> PRT
<213> Escherichia coli

<400> 94

Ser Ser Asn Tyr Cys Cys Glu Leu Cys Cys Tyr Pro Ala Cys Ala Gly
1 5 10 15

Cys Asn

<210> 95
<211> 42
<212> PRT
<213> Alzheimer's disease b-Amyloid

<400> 95

Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys
1 5 10 15

Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile
20 25 30

Gly Leu Met Val Gly Gly Val Val Ile Ala
35 40

<210> 96

<211> 17

<212> PRT

<213> Alzheimer's disease b-Amyloid

<400> 96

Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys
1 5 10 15

Leu

<210> 97

<211> 11

<212> PRT

<213> Alzheimer's disease b-Amyloid

<400> 97

Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile
1 5 10

<210> 98

<211> 33

<212> PRT

<213> Alzheimer's disease b-Amyloid

<400> 98

Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys
1 5 10 15

Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile
20 25 30

Gly

<210> 99

<211> 32

<212> PRT

<213> alzheimer's disease b-amplyoid

<400> 99

Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys
1 5 10 15

Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile
20 25 30

<210> 100
<211> 13
<212> PRT
<213> Neisseria meningitidis

<400> 100

Tyr Val Ala Val Glu Asn Gly Val Ala Lys Lys Val Ala
1 5 10

<210> 101
<211> 15
<212> PRT
<213> Neisseria meningitidis

<400> 101

His Phe Val Gln Gln Thr Pro Lys Ser Gln Pro Thr Leu Val Pro
1 5 10 15

<210> 102
<211> 13
<212> PRT
<213> Neisseria meningitidis

<400> 102

His Val Val Val Asn Asn Lys Val Ala Thr His Val Pro
1 5 10

<210> 103
<211> 12
<212> PRT
<213> Neisseria meningitidis

<400> 103

Pro Leu Gln Asn Ile Gln Pro Gln Val Thr Lys Arg
1 5 10

<210> 104
<211> 21
<212> PRT
<213> Neisseria meningitidis

<400> 104

Ala Gln Ala Ala Asn Gly Gly Ala Ala Ser Gly Gln Val Lys Val Thr
1 5 10 15

Lys Val Thr Lys Ala
20

<210> 105
<211> 10
<212> PRT
<213> **Neisseria meningitidis**

<400> 105

Tyr Val Asp Glu Gln Ser Lys Tyr His Ala
1 5 10

<210> 106
<211> 15
<212> PRT
<213> **Neisseria meningitidis**

<400> 106

His Phe Val Gln Asn Lys Gln Asn Gln Pro Pro Thr Leu Val Pro
1 5 10 15

<210> 107
<211> 18
<212> PRT
<213> **Neisseria meningitidis**

<400> 107

Lys Pro Ser Ser Thr Asn Ala Lys Thr Gly Asn Lys Val Glu Val Thr
1 5 10 15

Lys Ala

<210> 108
<211> 17
<212> PRT
<213> **Neisseria meningitidis**

<400> 108

Tyr Trp Thr Thr Val Asn Thr Gly Ser Ala Thr Thr Thr Phe Val
1 5 10 15

Pro

<210> 109
<211> 11
<212> PRT
<213> **Neisseria meningitidis**

<400> 109

Tyr Val Asp Glu Lys Lys Lys Met Val His Ala
1 5 10

<210> 110

<211> 13

<212> PRT

<213> **Neisseria meningitidis**

<400> 110

His Tyr Thr Arg Gln Asn Asn Ala Asp Val Phe Val Pro
1 5 10

<210> 111

<211> 14

<212> PRT

<213> **Neisseria meningitidis**

<400> 111

Tyr Tyr Thr Lys Asp Thr Asn Asn Asn Leu Thr Leu Val Pro
1 5 10

<210> 112

<211> 14

<212> PRT

<213> **Neisseria meningitidis**

<400> 112

Pro Pro Gln Lys Asn Gln Ser Gln Pro Val Val Thr Lys Ala
1 5 10

<210> 113

<211> 14

<212> PRT

<213> **Neisseria meningitidis**

<400> 113

Pro Pro Ser Lys Gly Gln Thr Gly Asn Lys Val Thr Lys Gly
1 5 10

<210> 114

<211> 14

<212> PRT

<213> **Neisseria meningitidis**

<400> 114

Pro Pro Ser Lys Ser Gln Pro Gln Val Lys Val Thr Lys Ala
1 5 10

<210> 115

<211> 18

<212> PRT

<213> **Neisseria meningitidis**

<400> 115

Gln Pro Gln Thr Ala Asn Thr Gln Gln Gly Gly Lys Val Lys Val Thr
1 5 10 15

Lys Ala

<210> 116
<211> 18
<212> PRT
<213> **Neisseria meningitidis**

<400> 116

Gln Pro Gln Val Thr Asn Gly Val Gln Gly Asn Gln Val Lys Val Thr
1 5 10 15

Lys Ala

<210> 117
<211> 18
<212> PRT
<213> **Neisseria meningitidis**

<400> 117

Gln Pro Ser Lys Ala Gln Gly Gln Thr Asn Asn Gln Val Lys Val Thr
1 5 10 15

Lys Ala

<210> 118
<211> 20
<212> PRT
<213> **Neisseria meningitidis**

<400> 118

Pro Pro Ser Ser Asn Gln Gly Lys Asn Gln Ala Gln Thr Gly Asn Thr
1 5 10 15

Val Thr Lys Ala
20

<210> 119
<211> 18
<212> PRT
<213> **Neisseria meningitidis**

<400> 119

Pro Pro Ser Lys Ser Gln Gly Lys Thr Gly Asn Gln Val Lys Val Thr
1 5 10 15

Lys Ala

<210> 120
<211> 18
<212> PRT

<213> *Neisseria meningitidis*

<400> 120

Pro Pro Ser Lys Ser Gln Gly Thr Asn Asn Asn Gln Val Lys Val Thr
1 5 10 15

Lys Ala

<210> 121

<211> 18

<212> PRT

<213> *Neisseria meningitidis*

<400> 121

Pro Pro Ser Lys Ser Gln Pro Gly Gln Val Lys Val Thr Lys Val Thr
1 5 10 15

Lys Ala

<210> 122

<211> 24

<212> PRT

<213> *Neisseria meningitidis*

<400> 122

Gln Leu Gln Leu Thr Glu Gln Pro Ser Ser Thr Asn Gly Gln Thr Gly
1 5 10 15

Asn Gln Val Lys Val Thr Lys Ala
20

<210> 123

<211> 24

<212> PRT

<213> *Neisseria meningitidis*

<400> 123

Gln Leu Gln Leu Thr Glu Ala Pro Ser Lys Ser Gln Gly Ala Ala Ser
1 5 10 15

Asn Gln Val Lys Val Thr Lys Ala
20

<210> 124

<211> 19

<212> PRT

<213> *Neisseria meningitidis*

<400> 124

Ser Ala Tyr Thr Pro Ala His Val Tyr Val Asp Asn Lys Val Ala Lys
1 5 10 15

His Val Ala

<210> 125
<211> 21
<212> PRT
<213> Neisseria meningitidis

<400> 125

Ser Ala Tyr Thr Pro Ala His Phe Val Gln Asn Lys Gln Asn Asn Asn
1 5 10 15

Pro Thr Leu Val Pro
20

<210> 126
<211> 12
<212> PRT
<213> Neisseria meningitidis

<400> 126

Val Glu Gly Arg Asn Tyr Gln Leu Gln Leu Thr Glu
1 5 10

<210> 127
<211> 12
<212> PRT
<213> Neisseria meningitidis

<400> 127

Pro Ala Gln Asn Ser Lys Ser Ala Tyr Thr Pro Ala
1 5 10

<210> 128
<211> 22
<212> PRT
<213> Neisseria meningitidis

<400> 128

Gln Leu Gln Leu Thr Glu Pro Pro Ser Lys Asn Gln Ala Gln Thr Gln
1 5 10 15

Asn Lys Val Thr Lys Ala
20

<210> 129
<211> 16
<212> PRT
<213> Neisseria meningitidis

<400> 129

Gly Arg Asp Ala Phe Glu Leu Phe Leu Leu Gly Ser Gly Ser Asp Glu

1

5

10

15

<210> 130
<211> 31
<212> PRT
<213> **Neisseria meningitidis**

<400> 130

Arg His Ala Asn Val Gly Arg Asp Ala Phe Glu Leu Phe Leu Leu Gly
1 5 10 15

Ser Gly Ser Asp Glu Ala Lys Gly Thr Asp Pro Leu Lys Asn His
20 25 30

<210> 131
<211> 18
<212> PRT
<213> **Neisseria meningitidis**

<400> 131

Gly Arg Asp Ala Phe Asn Leu Phe Leu Leu Gly Arg Ile Gly Asp Asp
1 5 10 15

Asp Glu

<210> 132
<211> 17
<212> PRT
<213> **Neisseria meningitidis**

<400> 132

Gly Arg Asn Ala Phe Glu Leu Phe Leu Ile Gly Ser Ala Thr Ser Asp
1 5 10 15

Gln

<210> 133
<211> 15
<212> PRT
<213> **Neisseria meningitidis**

<400> 133

Gln Val Lys Val Thr Lys Ala Lys Ser Arg Ile Arg Thr Lys Ile
1 5 10 15

<210> 134
<211> 13
<212> PRT
<213> **Neisseria meningitidis**

<400> 134

Thr Leu Val Pro Ala Val Val Gly Lys Pro Gly Ser Asp
1 5 10

<210> 135
<211> 17
<212> PRT
<213> *Neisseria meningitidis*

<400> 135

His Ala Lys Ala Ser Ser Ser Leu Gly Ser Ala Lys Gly Phe Ser Pro
1 5 10 15

Arg

<210> 136
<211> 15
<212> PRT
<213> *Neisseria meningitidis*

<400> 136

Thr Arg Tyr Lys Asn Tyr Lys Ala Pro Ser Thr Asp Phe Lys Leu
1 5 10 15

<210> 137
<211> 18
<212> PRT
<213> *Neisseria meningitidis*

<400> 137

Ser Leu Asn Arg Ala Ser Val Asp Leu Gly Gly Ser Asp Ser Phe Ser
1 5 10 15

Gln Thr

<210> 138
<211> 21
<212> PRT
<213> *Neisseria meningitidis*

<400> 138

Gly Lys Val Asn Thr Val Lys Asn Val Arg Ser Gly Glu Leu Ser Ala
1 5 10 15

Gly Val Arg Val Lys
20

<210> 139
<211> 21
<212> PRT
<213> *Neisseria meningitidis*

<400> 139

Gly Lys Val Asn Thr Val Lys Asn Val Arg Ser Gly Glu Leu Ser Val
1 5 10 15

Gly Val Arg Val Lys
20

<210> 140
<211> 13
<212> PRT
<213> Homo sapiens

<400> 140

Ala Pro Glu Trp Pro Gly Ser Arg Asp Lys Arg Thr Leu
1 5 10

<210> 141
<211> 9
<212> PRT
<213> Homo sapiens

<400> 141

Glu Asp Gly Gln Val Met Asp Val Asp
1 5

<210> 142
<211> 8
<212> PRT
<213> Homo sapiens

<400> 142

Ser Thr Thr Gln Glu Gly Glu Leu
1 5

<210> 143
<211> 10
<212> PRT
<213> Homo sapiens

<400> 143

Gly His Thr Phe Glu Asp Ser Thr Lys Lys
1 5 10

<210> 144
<211> 8
<212> PRT
<213> Homo sapiens

<400> 144

Gly Gly Gly His Phe Pro Pro Thr
1 5

<210> 145
<211> 6

<212> PRT
<213> Homo sapiens

<400> 145

Pro Gly Thr Ile Asn Ile
1 5

<210> 146
<211> 5
<212> PRT
<213> Homo sapiens

<400> 146

Phe Thr Pro Pro Thr
1 5

<210> 147
<211> 8
<212> PRT
<213> Homo sapiens

<400> 147

Ile Asn His Arg Gly Tyr Trp Val
1 5

<210> 148
<211> 17
<212> PRT
<213> Homo sapiens

<400> 148

Gly Glu Phe Cys Ile Asn His Arg Gly Tyr Trp Val Cys Gly Asp Pro
1 5 10 15

Ala

<210> 149
<211> 14
<212> PRT
<213> Homo sapiens

<400> 149

Met Ala Pro Glu Trp Pro Gly Ser Arg Asp Lys Arg Thr Leu
1 5 10

<210> 150
<211> 10
<212> PRT
<213> Homo sapiens

<400> 150

Met Glu Asp Gly Gln Val Met Asp Val Asp
1 5 10

<210> 151
<211> 9
<212> PRT
<213> Homo sapiens

<400> 151

Met Ser Thr Thr Gln Glu Gly Glu Leu
1 5

<210> 152
<211> 11
<212> PRT
<213> Homo sapiens

<400> 152

Met Gly His Thr Phe Glu Asp Ser Thr Lys Lys
1 5 10

<210> 153
<211> 9
<212> PRT
<213> Homo sapiens

<400> 153

Met Gly Gly Gly His Phe Pro Pro Thr
1 5

<210> 154
<211> 7
<212> PRT
<213> Homo sapiens

<400> 154

Met Pro Gly Thr Ile Asn Ile
1 5

<210> 155
<211> 6
<212> PRT
<213> Homo sapiens

<400> 155

Met Phe Thr Pro Pro Thr
1 5

<210> 156
<211> 9
<212> PRT
<213> Homo sapiens

<400> 156

Met Ile Asn His Arg Gly Tyr Trp Val
1 5

<210> 157
<211> 18
<212> PRT
<213> **Homo sapiens**

<400> 157

Met Gly Glu Phe Cys Ile Asn His Arg Gly Tyr Trp Val Cys Gly Asp
1 5 10 15

Pro Ala

<210> 158
<211> 21
<212> PRT
<213> **Hepatitis B virus**

<400> 158

Met Gly Thr Asn Leu Ser Val Pro Asn Pro Leu Gly Phe Phe Pro Asp
1 5 10 15

His Gln Leu Asp Pro
20

<210> 159
<211> 8
<212> PRT
<213> **Hepatitis B virus**

<400> 159

Pro Leu Gly Phe Phe Pro Asp His
1 5

<210> 160
<211> 10
<212> PRT
<213> **Hepatitis B virus**

<400> 160

Pro Leu Gly Phe Phe Pro Asp His Gln Leu
1 5 10

<210> 161
<211> 26
<212> PRT
<213> **Hepatitis B virus**

<400> 161

Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
1 5 10 15

Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly

<210> 162
 <211> 14
 <212> PRT
 <213> Hepatitis B

<400> 162

Met Gln Trp Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro
 1 5 10

<210> 163
 <211> 14
 <212> PRT
 <213> Hepatitis B virus

<400> 163

Met Gln Trp Ser Thr Ala Leu His Gln Ala Leu Gln Asp Pro
 1 5 10

<210> 164
 <211> 6
 <212> PRT
 <213> Hepatitis B virus

<400> 164

Gln Asp Pro Arg Val Arg
 1 5

<210> 165
 <211> 13
 <212> PRT
 <213> Hepatitis B virus

<400> 165

Asp Pro Arg Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly
 1 5 10

<210> 166
 <211> 13
 <212> PRT
 <213> Hepatitis B virus

<400> 166

Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala Gly Gly
 1 5 10

<210> 167
 <211> 24
 <212> PRT
 <213> B. anthracis

<400> 167

Ile Val Thr Lys Glu Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp

1

5

10

15

Thr Ser Thr Asn Gly Ile Glu Leu
20

<210> 168
<211> 15
<212> PRT
<213> Hookworm

<400> 168

Ile Val Tyr Gln His Ser His Gly Glu Asp Arg Pro Gly Glu Leu
1 5 10 15

<210> 169
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> linker peptide

<400> 169

Gly Ser Gly Asp Gly Glu Gly Gly
1 5

<210> 170
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> flexible linker arm

<400> 170

Gly Gly Gly Gly Ser Gly Gly Gly Gly Thr
1 5 10

<210> 171
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Flexible linker arm sequence

<400> 171

Gly Gly Gly Gly Ser Gly Gly Gly Gly
1 5

<210> 172
<211> 7
<212> PRT
<213> Artificial sequence

<220>

<223> Flexible linker arm

<400> 172

Gly Ser Gly Asp Glu Gly Gly
1 5

<210> 173

<211> 8

<212> PRT

<213> Artificial sequence

<220>

<223> Flexible linker arm

<400> 173

Gly Gly Gly Gly Ser Gly Gly Gly
1 5

<210> 174

<211> 16

<212> PRT

<213> HIV

<400> 174

Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Cys
1 5 10 15

<210> 175

<211> 17

<212> PRT

<213> Corynebacterium diphtheriae

<400> 175

Phe Gln Val Val His Asn Ser Tyr Asn Arg Pro Ala Tyr Ser Pro Gly
1 5 10 15

Cys

<210> 176

<211> 25

<212> PRT

<213> Borrelia burgdorferi

<400> 176

Val Glu Ile Lys Glu Gly Thr Val Thr Leu Lys Arg Glu Ile Asp Lys
1 5 10 15

Asn Gly Lys Val Thr Val Ser Leu Cys
20 25

<210> 177

<211> 19

<212> PRT

<213> *Borrelia burgdorferi*

<400> 177

Thr Leu Ser Lys Asn Ile Ser Lys Ser Gly Glu Val Ser Val Val Glu Leu
1 5 10 15

Asn Asp Cys

<210> 178

<211> 11

<212> PRT

<213> *Influenza A virus*

<400> 178

Ser Ser Val Ser Ser Phe Glu Arg Phe Glu Cys
1 5 10

<210> 179

<211> 10

<212> PRT

<213> *Influenza A virus*

<400> 179

Leu Ile Asp Ala Leu Leu Gly Asp Pro Cys
1 5 10

<210> 180

<211> 9

<212> PRT

<213> *Influenza A virus*

<400> 180

Thr Leu Ile Asp Ala Leu Leu Gly Cys
1 5

<210> 181

<211> 24

<212> PRT

<213> *Influenza A virus*

<400> 181

Phe Trp Arg Gly Glu Asn Gly Arg Lys Thr Arg Ser Ala Tyr Glu Arg
1 5 10 15

Met Cys Asn Ile Leu Lys Gly Lys
20

<210> 182

<211> 22

<212> PRT

<213> *Influenza A virus*

<400> 182

Leu Arg Val Leu Ser Phe Ile Arg Gly Thr Lys Val Ser Pro Arg Gly
1 5 10 15

Lys Leu Ser Thr Arg Gly
20

<210> 183
<211> 22
<212> PRT
<213> Influenza A virus

<400> 183

Ser Leu Val Gly Ile Asp Pro Phe Lys Leu Leu Gln Asn Ser Gln Val
1 5 10 15

Tyr Ser Leu Ile Arg Pro
20

<210> 184
<211> 24
<212> PRT
<213> Influenza A virus

<400> 184

Ala Val Lys Gly Val Gly Thr Met Val Met Glu Leu Ile Arg Met Ile
1 5 10 15

Lys Arg Gly Ile Asn Asp Arg Asn
20

<210> 185
<211> 21
<212> PRT
<213> Trypanosoma cruzi

<400> 185

Ser His Asn Phe Thr Leu Val Ala Ser Val Ile Ile Glu Glu Ala Pro
1 5 10 15

Ser Gly Asn Thr Cys
20

<210> 186
<211> 16
<212> PRT
<213> Plasmodium falciparum

<400> 186

Ser Val Gln Ile Pro Lys Val Pro Tyr Pro Asn Gly Ile Val Tyr Cys
1 5 10 15

<210> 187

<211> 16
<212> PRT
<213> Plasmodium falciparum

<400> 187

Asp Phe Asn His Tyr Tyr Thr Leu Lys Thr Gly Leu Glu Ala Asp Cys
1 5 10 15

<210> 188
<211> 18
<212> PRT
<213> Plasmodium falciparum

<400> 188

Pro Ser Asp Lys His Ile Glu Gln Tyr Lys Lys Ile Lys Asn Ser Ile
1 5 10 15

Ser Cys

<210> 189
<211> 20
<212> PRT
<213> Plasmodium falciparum

<400> 189

Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser Pro
1 5 10 15

Cys Ser Val Thr
20

<210> 190
<211> 19
<212> PRT
<213> Plasmodium vivax

<400> 190

Tyr Leu Asp Lys Val Arg Ala Thr Val Gly Thr Glu Trp Thr Pro Cys
1 5 10 15

Ser Val Thr

<210> 191
<211> 20
<212> PRT
<213> Plasmodium yoelii

<400> 191

Glu Phe Val Lys Gln Ile Ser Ser Gln Leu Thr Glu Glu Trp Ser Gln
1 5 10 15

Cys Ser Val Thr
20

<210> 192
<211> 16
<212> PRT
<213> *Streptococcus sobrinus*

<400> 192

Lys Pro Arg Pro Ile Tyr Glu Ala Lys Leu Ala Gln Asn Gln Lys Cys
1 5 10 15

<210> 193
<211> 17
<212> PRT
<213> *Streptococcus sobrinus*

<400> 193

Ala Lys Ala Asp Tyr Glu Ala Lys Leu Ala Gln Tyr Glu Lys Asp Leu
1 5 10 15

Cys

<210> 194
<211> 16
<212> PRT
<213> *Lymphocytic choriomeningitis virus*

<400> 194

Arg Pro Gln Ala Ser Gly Val Tyr Met Gly Asn Leu Thr Ala Gln Cys
1 5 10 15

<210> 195
<211> 16
<212> PRT
<213> *Clostridium tetani*

<400> 195

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Cys
1 5 10 15

<210> 196
<211> 19
<212> PRT
<213> *Neisseria meningitidis*

<400> 196

Ala Ile Trp Gln Val Glu Gln Lys Ala Ser Ile Ala Gly Thr Asp Ser
1 5 10 15

Gly Trp Cys

<210> 197
<211> 19
<212> PRT
<213> **Neisseria meningitidis**

<400> 197

Asn Tyr Lys Asn Gly Gly Phe Phe Val Gln Tyr Gly Gly Ala Tyr Lys
1 5 10 15

Arg His Cys

<210> 198
<211> 19
<212> PRT
<213> **Neisseria meningitidis**

<400> 198

His Asn Ser Gln Thr Glu Val Ala Ala Thr Leu Ala Tyr Arg Phe Gly
1 5 10 15

Asn Val Cys

<210> 199
<211> 19
<212> PRT
<213> **Neisseria meningitidis**

<400> 199

Thr Pro Arg Val Ser Tyr Ala His Gly Phe Lys Gly Leu Val Asp Asp
1 5 10 15

Ala Asp Cys

<210> 200
<211> 19
<212> PRT
<213> **Neisseria meningitidis**

<400> 200

Arg Phe Gly Asn Ala Val Pro Arg Ile Ser Tyr Ala His Gly Phe Asp
1 5 10 15

Phe Ile Cys

<210> 201
<211> 19
<212> PRT
<213> **Neisseria meningitidis**

<400> 201

Ala Phe Lys Tyr Ala Arg His Ala Asn Val Gly Arg Asn Ala Phe Glu
1 5 10 15

Leu Phe Cys

<210> 202

<211> 20

<212> PRT

<213> Neisseria meningitidis

<400> 202

Ser Gly Ala Trp Leu Lys Arg Asn Thr Gly Ile Gly Asn Tyr Thr Gln
1 5 10 15

Ile Asn Ala Cys

20

<210> 203

<211> 16

<212> PRT

<213> Neisseria meningitidis

<400> 203

Ala Gly Glu Phe Gly Thr Leu Arg Ala Gly Arg Val Ala Asn Gln Cys
1 5 10 15

<210> 204

<211> 16

<212> PRT

<213> Neisseria meningitidis

<400> 204

Ile Gly Asn Tyr Thr Gln Ile Asn Ala Ala Ser Val Gly Leu Arg Cys
1 5 10 15

<210> 205

<211> 16

<212> PRT

<213> Neisseria meningitidis

<400> 205

Gly Arg Asn Tyr Gln Leu Gln Leu Thr Glu Gln Pro Ser Arg Thr Cys
1 5 10 15

<210> 206

<211> 16

<212> PRT

<213> Neisseria meningitidis

<400> 206

Ser Gly Ser Val Gln Phe Val Pro Ala Gln Asn Ser Lys Ser Ala Cys

1

5

10

15

<210> 207

<211> 16

<212> PRT

<213> **Neisseria meningitidis**

<400> 207

His Ala Asn Val Gly Arg Asp Ala Phe Asn Leu Phe Leu Leu Gly Cys
1 5 10 15

<210> 208

<211> 16

<212> PRT

<213> **Neisseria meningitidis**

<400> 208

Leu Gly Arg Ile Gly Asp Asp Asp Glu Ala Lys Gly Thr Asp Pro Cys
1 5 10 15

<210> 209

<211> 16

<212> PRT

<213> **Neisseria meningitidis**

<400> 209

Ser Val Gln Phe Val Pro Ala Gln Asn Ser Lys Ser Ala Tyr Lys Cys
1 5 10 15

<210> 210

<211> 16

<212> PRT

<213> **Neisseria meningitidis**

<400> 210

Asn Tyr Ala Phe Lys Tyr Ala Lys His Ala Asn Val Gly Arg Asp Cys
1 5 10 15

<210> 211

<211> 16

<212> PRT

<213> **Neisseria meningitidis**

<400> 211

Ala His Gly Phe Asp Phe Ile Glu Arg Gly Lys Lys Gly Glu Asn Cys
1 5 10 15

<210> 212

<211> 16

<212> PRT

<213> **Neisseria meningitidis**

<400> 212

Gly Val Asp Tyr Asp Phe Ser Lys Arg Thr Ser Ala Ile Val Ser Cys

1

5

10

15

<210> 213

<211> 16

<212> PRT

<213> *Neisseria meningitidis*

<400> 213

His Asp Asp Met Pro Val Ser Val Arg Tyr Asp Ser Pro Asp Phe Cys
1 5 10 15

<210> 214

<211> 27

<212> PRT

<213> *Neisseria meningitidis*

<400> 214

Arg Phe Gly Asn Ala Val Pro Arg Ile Ser Tyr Ala His Gly Phe Asp
1 5 10 15

Phe Ile Glu Arg Gly Lys Lys Gly Glu Asn Cys
20 25

<210> 215

<211> 24

<212> PRT

<213> *Neisseria meningitidis*

<400> 215

Asn Tyr Ala Phe Lys Tyr Ala Lys His Ala Asn Val Gly Arg Asp Ala
1 5 10 15

Phe Asn Leu Phe Leu Leu Gly Cys
20

<210> 216

<211> 26

<212> PRT

<213> *Neisseria meningitidis*

<400> 216

Ser Gly Ala Trp Leu Lys Arg Asn Thr Gly Ile Gly Asn Tyr Thr Gln
1 5 10 15

Ile Asn Ala Ala Ser Val Gly Leu Arg Cys
20 25

<210> 217

<211> 20

<212> PRT

<213> *Neisseria meningitidis*

<400> 217

Ser Gly Ser Val Gln Phe Val Pro Ala Gln Asn Ser Lys Ser Ala Tyr
1 5 10 15

Thr Pro Ala Cys
20

<210> 218
<211> 19
<212> PRT
<213> *Neisseria meningitidis*

<400> 218

Thr Gly Ala Asn Asn Thr Ser Thr Val Ser Asp Tyr Phe Arg Asn Arg
1 5 10 15

Ile Thr Cys

<210> 219
<211> 19
<212> PRT
<213> *Neisseria meningitidis*

<400> 219

Ile Tyr Asp Phe Lys Leu Asn Asp Lys Phe Asp Lys Phe Lys Pro Tyr
1 5 10 15

Ile Gly Cys

<210> 220
<211> 19
<212> PRT
<213> *Neisseria meningitidis*

<400> 220

Leu Ser Ala Ile Tyr Asp Phe Lys Leu Asn Asp Lys Phe Lys Pro Tyr
1 5 10 15

Ile Gly Cys

<210> 221
<211> 19
<212> PRT
<213> *Neisseria meningitidis*

<400> 221

Asn Gly Trp Tyr Ile Asn Pro Trp Ser Glu Val Lys Phe Asp Leu Asn
1 5 10 15

Ser Arg Cys

<210> 222
<211> 20
<212> PRT
<213> Hepatitis B virus

<400> 222

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro
20

<210> 223
<211> 24
<212> PRT
<213> Hepatitis B virus

<400> 223

Arg Asp Leu Leu Asp Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser
1 5 10 15

Pro Glu His Cys Ser Pro His His
20

<210> 224
<211> 25
<212> PRT
<213> Hepatitis B virus

<400> 224

Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala Ser Arg Asp Leu Val
1 5 10 15

Val Ser Tyr Val Asn Thr Asn Met Gly
20 25

<210> 225
<211> 16
<212> PRT
<213> Hepatitis B virus

<400> 225

Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys Phe Arg Gln Leu
1 5 10 15

<210> 226
<211> 21
<212> PRT
<213> Hepatitis B virus

<400> 226

Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg Glu Thr Val

1

5

10

15

Ile Glu Tyr Leu Val
20

<210> 227
<211> 32
<212> PRT
<213> Hepatitis B virus

<400> 227

Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Val Ser Phe Gly Val
1 5 10 15

Trp Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu
20 25 30

<210> 228
<211> 21
<212> PRT
<213> Hepatitis B virus

<400> 228

Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro
1 5 10 15

Asn Ala Pro Ile Leu
20

<210> 229
<211> 12
<212> PRT
<213> Hepatitis B virus

<400> 229

Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala
1 5 10

<210> 230
<211> 12
<212> PRT
<213> Hepatitis B virus

<400> 230

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu
1 5 10

<210> 231
<211> 12
<212> PRT
<213> Hepatitis B virus

<400> 231

Trp Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn
1 5 10

<210> 232
<211> 20
<212> PRT
<213> Hepatitis B virus

<400> 232

Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu
1 5 10 15

Met Thr Leu Ala
20

<210> 233
<211> 13
<212> PRT
<213> Artificial sequence

<220>
<223> PADRE epitope

<400> 233

Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
1 5 10

<210> 234
<211> 549
<212> DNA
<213> Hepatitis B virus

<400> 234
atggacatcg acccttataa agaatttggaa gctactgtgg agttactctc gttttgcct
60

tctgacttct ttccttcagt acgagatctt ctagataccg cctcagctct gtatcggaa
120

gccttagagt ctcctgagca ttgttcacct caccatactg cactcaggca agcaattctt
180

tgctgggggg aactaatgac tctagctacc tgggtgggtg ttaatttggaa agatccagcg
240

tctagagacc tagtagtcag ttatgtcaac actaatatgg gcctaaagtt caggcaactc
300

ttgtggtttc acatttcttg tctcaactttt ggaagagaaa cagttataga gtatttggtg
360

tcttcggag tgtggattcg cactcctcca gcttataagac caccaaatgc ccctatccta
420

tcaacacttc cggagactac tgttgttaga cgacgaggca ggtcccctag aagaagaact
480

ccctcgccctc gcagacgaag gtctcaatcg ccgcgtcgca gaagatctca atctcggaa
540

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tctcaatgt
549

<210> 235
<211> 555
<212> DNA
<213> Hepatitis B virus

<400> 235
atggacattg acccttataa agaatttgg a gctactgtgg agttactctc gttttgcct
60

tctgacttct ttccttcgt acgagatctc ctagacacccg cctcagctct gtatcgagaa
120

gccttagagt ctcctgagca ttgctcacct caccatactg cactcaggca agccattctc
180

tgctgggggg aattgatgac tctagctacc tgggtgggta ataatttgc a agatccagca
240

tccagagatc tagtagtcaa ttatgttaat actaacatgg gttaaagat caggcaacta
300

ttgtggtttc atatatcttg cttactttt ggaagagaga ctgtacttga atattggc
360

tcttcggag tgtggattcg cactcctcca gcctatagac caccaatgc ccctatctt
420

tcaacacttc cggaaactac tggtttaga cgacgggacc gaggcaggc ccctagaaga
480

agaactccct cgcctcgac acgcagatct caatcgccgc gtcgcagaag atctcaatct
540

cgaaaatctc aatgt
555

<210> 236
<211> 555
<212> DNA
<213> Hepatitis B virus

<400> 236
atggacattg acccttataa agaatttgg a gctactgtgg agttactctc gttttgcct
60

tctgacttct ttccttcgt cagagatctc ctagacacccg cctcagctct gtatcgagaa
120

gccttagagt ctcctgagca ttgctcacct caccatactg cactcaggca agccattctc
180

tgctgggggg aattgatgac tctagctacc tgggtgggta ataatttgg a agatccagca
240

tctaggatc ttgttagtaaa ttatgttaat actaacgtgg gttaaagat caggcaacta
300

ttgtggtttc atatatcttg cttactttt ggaagagaga ctgtacttga atattggc
360

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tcttcggag tgtggattcg cactcctcca gcctatagac caccaaatgc ccctatctta
420

tcaacacttc cggaaactac tgttttaga cgacgggacc gaggcaggtc ccctagaaga
480

agaactccct cgccctcgca acgcagatct ccatcgccgc gtcgcagaag atctcaatct
540

cggaaatctc aatgt
555

<210> 237
<211> 549
<212> DNA
<213> Hepatitis B virus

<400> 237
atggacattg acccttataa agaatttgga gctactgtgg agttaactctc gttttgcct
60

tctgacttct ttccttcgt acgagatctt ctagataccg ccgcagctct gtatcggtat
120

gccttagagt ctcctgagca ttgttcacct caccatactg cactcaggca agcaattctt
180

tgctggggag acttaatgac tctagctacc tgggtggta ctaattttaga agatccagca
240

tctagggacc tagtagtcag ttatgtcaac actaatgtgg gcctaaagtt cagacaattt
300

ttgtggtttc acatttcttg tctcaacttt ggaagagaaa cggttctaga gtattggtg
360

tctttggag tgtggattcg cactcctcca gcttataagac caccaaatgc ccctatccta
420

tcaacgcttc cggagactac tgttttaga cgacgaggca ggtcccctag aagaagaact
480

ccctcgccctc gcagacgaag atctcaatcg ccgcgtcgca gaagatctca atctcggaa
540

tctcaatgt
549

<210> 238
<211> 549
<212> DNA
<213> Woodchuck

<400> 238
atggctttgg ggcatggaca tagatcctta taaagaattt ggttcatctt atcagttgtt
60

gaattttctt ccttggact tcttcctga tcttaatgtt ttgggtggaca ctgctactgc
120

cttgtatgaa gaagaactaa caggtaggaa acattgtct ccgcaccata cagctattag
180

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acaagctta gtatgctggg atgaattaac taaattgata gcttggatga gctctaacat
 240
 aacttctgaa caagtaagaa caatcattgt aaatcatgtc aatgataacct ggggacttaa
 300
 ggtgagacaa agtttatggt ttcatttgc atgtctcaact ttcggacaac atacagttca
 360
 agaattttta gtaagtttg gagtatggat caggactcca gctccatata gacccctaa
 420
 tgcaccatt ctctcgactc ttccggaaca tacagtcataggagaagag gaggtgcaag
 480
 agcttctagg tccccagaa gacgcactcc ctctcctcgc aggagaagat ctcaatcacc
 540
 gcgtcgcag
 549

<210> 239
 <211> 651
 <212> DNA
 <213> Ground squirrel

<400> 239
 atgtatctt ttcacctgtg cctgtttt gcctgtgttc catgtcctac tggtaagcc
 60
 tccaagctgt gccttggatg gcttggac atggacatag atccctataa agaatttgg
 120
 tcttcttatac agttgttcaa ttttcttctt ttggactttt ttcctgatct caatgcatt
 180
 gtggacactg ctgctgctt ttatgaagaa gaattaacag gttagggagca ttgttctc
 240
 catcatactg ctattagaca ggccttagtg tggtggaaag aatataactg attaattaca
 300
 tggatgagtg aaaataacaac agaagaagtt agaagaatta ttgttgcata tgtcaataat
 360
 acttggggac ttaaagtaag acagactta tggtttcatt tatcatgtct tactttgg
 420
 caacacacag ttcaagaatt tttggtagt tttggatgt ggattagaac tccagctc
 480
 tatagaccac ctaatgcacc cattttatca actcttcgg aacatacagt cattaggaga
 540
 agaggagggtt caagagctgc taggtcccc cgaagacgca ctccctctcc tcgcaggaga
 600
 aggtctcaat caccgcgtcg cagacgctct caatctccag cttccaaactg c
 651

<210> 240
 <211> 18
 <212> DNA
 <213> Artificial sequence

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<220>
<223> primer

<400> 240
ggtgcatgca aggagatg
18

<210> 241
<211> 55
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 241
gcgaagcttc ggatcccatg gtttttcct ccttatgtga aattgttatac cgctc
55

<210> 242
<211> 24
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 242
ttgggccccatg gacatcgacc ctta
24

<210> 243
<211> 31
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 243
cgcaagctta aacaacagta gtctccggaa g
31

<210> 244
<211> 43
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 244
gtttctcttc caaaaagttag gctagaaaatg tgaaaccacca aga
43

<210> 245
<211> 20
<212> DNA
<213> Artificial sequence
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<220>
<223> primer

<400> 245
ctcactttg gaagagaaac
20

<210> 246
<211> 39
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 246
gagcgcagta tggtgagggtg agctatgctc aggagactc
39

<210> 247
<211> 25
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 247
gaggcgctca ggcaagcaat tcttt
25

<210> 248
<211> 35
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 248
cgcaagctta ctagcaaaca acagtagtct cggaa
35

<210> 249
<211> 49
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 249
gcgctttcc aaaagtgagg ctagaaatgc aaaaccacaa gagttgcct
49

<210> 250
<211> 42
<212> DNA
<213> Artificial sequence

<220>
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<223> primer

<400> 250
gcggggccat attagtgttgc aataactga ctactaggc tc
42

<210> 251
<211> 50
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 251
gcggctcgcc ccagcaaaga attgcttgtc tacacgcagt atggtgaggt
50

<210> 252
<211> 27
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 252
ggggcgagct aatgactcta gctacct
27

<210> 253
<211> 43
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 253
gcggctcgcc ccagcaaaga atgcattgcc tgagcgcagt atg
43

<210> 254
<211> 20
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 254
ttaggccat attagtgttgc
20

<210> 255
<211> 44
<212> DNA
<213> Artificial sequence

<220>
<223> primer
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<400> 255
gcggggccta aagttcaggc aatgcttgcg gtttcacatt tcta
44

<210> 256
<211> 31
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 256
gcgcagggtg catagagtca ttagttcccc c
31

<210> 257
<211> 17
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 257
ctacctgggt ggggtgtt
17

<210> 258
<211> 19
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 258
tatgggccta aagttcagg
19

<210> 259
<211> 49
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 259
gcggctcgcc gcagcaaaga attgcttgcg tgagcgcagt atggtgagg
49

<210> 260
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> primer
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<400> 260
gcggggccta aagtgcaggc aactcttgtg gtt
33

<210> 261
<211> 29
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 261
gcccgttagct ggatcttcgc aattaacac
29

<210> 262
<211> 28
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 262
gcccgttagct gcgacctagt agtcagtt
28

<210> 263
<211> 24
<212> DNA
<213> Hepatitis B virus

<400> 263
ttggggccatg gacatcgacc ctta
24

<210> 264
<211> 31
<212> DNA
<213> Hepatitis B virus

<400> 264
gcggaattcc atcttccaaa ttaacacccca c
31

<210> 265
<211> 39
<212> DNA
<213> Hepatitis B virus

<400> 265
cgcgaattca aaaagagctc ccagcgtcta gagacctag
39

<210> 266
<211> 31
<212> DNA
<213> Hepatitis B virus
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<400> 266
cgcaagctta aacaacagta gtctccggaa g
31

<210> 267
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 267
cgcaagctta ctagcaaaca acagtagtct ccggaag
37

<210> 268
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 268
ggaaagctta ctaacattga gattcccg
28

<210> 269
<211> 31
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 269
gcggaattcc atcttccaaa ttaacaccca c
31

<210> 270
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 270
gcggaattcc atcttcgcaa ttaacaccca
30

<210> 271
<211> 39
<212> DNA
<213> Artificial sequence

<220>
<223> primer

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<400> 271
cgggattca aaaagagctc ccagcgctta gagacctag
39

<210> 272
<211> 37
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 272
gcggattca aaaagagctc ccagctagct gcgacct
37

<210> 273
<211> 108
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 273
aattctggat gcggatttc gtcatgacag cggctatgag gtgcaccatc agaaaactgg
60
tttcttgcc gaagatgtcg gttctaacaa gggggcaatt atcgagct
108

<210> 274
<211> 72
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 274
aattgtcacg aaagaaaata ctataattaa cccttctgag aatggtgaca cctccacgaa
60
cgggatcgag ct
72

<210> 275
<211> 45
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 275
aattgttat cagcattctc acggcgaaga tcgtccaggt gagct
45

<210> 276
<211> 78

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<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 276
aatttctctg ttaaccgaag tggagacgcc gattcgtaac gaatgggta gcccgtctaa
60

tgatagctct gacgagct
78

<210> 277
<211> 12
<212> PRT
<213> Hepatitis B virus

<400> 277

Met Gly Cys Glu Leu Asp Pro Tyr Lys Glu Phe Gly
1 5 10

<210> 278
<211> 40
<212> DNA
<213> Artificial sequence

<220>
<223> oligonucleotide

<400> 278
gccccatggg gtgtgagctc gacccttata aagaatttgg
40

<210> 279
<211> 12
<212> PRT
<213> Hepatitis B virus

<400> 279

Met Gly Cys Asp Ile Asp Pro Tyr Lys Glu Phe Gly
1 5 10

<210> 280
<211> 40
<212> DNA
<213> Artificial sequence

<220>
<223> oligonucleotide

<400> 280
gccccatggg gtgtgacatc gacccttata aagaatttgg
40

<210> 281
<211> 42
<212> DNA
<213> Artificial Sequence

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<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 281
cgcaagctta gagctcttga attccaaacaa cagtagtctc cg
42

<210> 282
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 282
cgcgagctcc cagcgtctag agacctag
28

<210> 283
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 283
gtatcaggct gaaaatc
17

<210> 284
<211> 19
<212> PRT
<213> Plasmodium falciparum

<400> 284

Ile Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
1 5 10 15

Pro Glu Leu

<210> 285
<211> 57
<212> DNA
<213> Plasmodium falciparum

<400> 285
aattaacgct aatccgaacg ctaatccgaa cgctaattccg aacgctaattc cggagct
57

<210> 286
<211> 49
<212> DNA

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<213> Plasmodium falciparum

<400> 286

ccggattagc gttcggtt gcgttcgat tagcggttgcg attagcgtt
49

<210> 287

<211> 31

<212> PRT

<213> Plasmodium falciparum

<400> 287

Ile Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn
1 5 10 15

Pro Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Glu Leu
20 25 30

<210> 288

<211> 93

<212> DNA

<213> Plasmodium falciparum

<400> 288

aattaacgct aatccgaacg ttgaccgaa cgctaattcg aacgctaattc cgaacgctaa
60

tccgaacggtt gacccgaacg ctaatccgga gct

93

<210> 289

<211> 91

<212> DNA

<213> Plasmodium falciparum

<400> 289

ggagctccgg attagcggtc gggtaacgt tcggattagc gttcggttgcg attagcggtt
60

tagcggttgcg gtcaacggttc ggattagcgt t

91

<210> 290

<211> 23

<212> PRT

<213> Plasmodium falciparum

<400> 290

Ile Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn
1 5 10 15

Pro Asn Ala Asn Pro Glu Leu
20

<210> 291

<211> 69

<212> DNA

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<213> Plasmodium falciparum

<400> 291
aattaacgctg aatccgaacg tggatccgaa tgccaaacctt aacgccaacc caaatgcgaa
60

cccagagct
69

<210> 292
<211> 61
<212> DNA
<213> Plasmodium falciparum

<400> 292
ctgggttcgc atttgggttg gcgttagggt tggcattcgg atccacgttc ggattcgcgt
60

t
61

<210> 293
<211> 23
<212> PRT
<213> Plasmodium falciparum

<400> 293

Ile Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Val Asp
1 5 10 15

Pro Asn Ala Asn Pro Glu Leu
20

<210> 294
<211> 69
<212> DNA
<213> Plasmodium falciparum

<400> 294
aattaacgctg aatccgaatg ccaaccctaa cgccaaacccaa aacgtggatc cgaatgcgaa
60

cccagagct
69

<210> 295
<211> 61
<212> DNA
<213> Plasmodium falciparum

<400> 295
ctgggttcgc attcggatcc acgtttgggt tggcgttagg gttggcattc ggattcgcgt
60

t
61

<210> 296
<211> 31

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<212> PRT
<213> Plasmodium falciparum

<400> 296

Ile Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn
1 5 10 15

Pro Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Glu Leu
20 25 30

<210> 297
<211> 93
<212> DNA
<213> Plasmodium falciparum

<400> 297
aattaacgcg aatccgaacg tggatccaaa tgccaaccct aacgctaatc caaacgccaa
60

cccgaatgtt gaccccaatg ccaatccgga gct
93

<210> 298
<211> 85
<212> DNA
<213> Plasmodium falciparum

<400> 298
ccggattggc attggggtca acattcgggt tggcgtttgg attagcgtta gggttggcat
60

ttggatccac gttcggattc gcgtt
85

<210> 299
<211> 23
<212> PRT
<213> Plasmodium falciparum

<400> 299

Ile Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn
1 5 10 15

Ala Asn Pro Asn Val Glu Leu
20

<210> 300
<211> 69
<212> DNA
<213> Plasmodium falciparum

<400> 300
aattaatccg aacgtggatc caaatgccaa ccctaacgct aatccaaacg ccaacccgaa
60

tgttgagct
69

```

<210> 301
<211> 61
<212> DNA
<213> Plasmodium falciparum

<400> 301
caacattcgg gttggcggtt ggattagcgt tagggttggc atttggatcc acgttcggat
60

t
61

<210> 302
<211> 25
<212> PRT
<213> Plasmodium falciparum

<400> 302

Ile Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn
1 5 10 15

Ala Asn Pro Asn Val Asp Pro Glu Leu
20 25

<210> 303
<211> 75
<212> DNA
<213> Plasmodium falciparum

<400> 303
aattaatccg aacgtggatc caaatgccaa ccctaacgct aatccaaacg ccaacccgaa
60

tgttgaccct gagct
75

<210> 304
<211> 67
<212> DNA
<213> Plasmodium falciparum

<400> 304
cagggtcaac attcgggttg gcgttggat tagcgtagg gttggcattt ggatccacgt
60

tcggatt
67

<210> 305
<211> 27
<212> PRT
<213> Plasmodium falciparum

<400> 305

Ile Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn
1 5 10 15

```

Ala Asn Pro Asn Val Asp Pro Asn Ala Glu Leu
20 25

<210> 306
<211> 81
<212> DNA
<213> Plasmodium falciparum

<400> 306
aattaatccg aacgtggatc caaatgc当地 ccctaacgct aatccaaacg ccaacccgaa
60

tggtgaccct aatgctgagc t
81

<210> 307
<211> 73
<212> DNA
<213> Plasmodium falciparum

<400> 307
cagcattagg gtcaacattc gggttggcgt ttggattagc gttagggttg gcatttggat
60

ccacgttcgg att
73

<210> 308
<211> 21
<212> PRT
<213> Plasmodium falciparum

<400> 308

Ile Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
1 5 10 15

Pro Asn Val Glu Leu
20

<210> 309
<211> 63
<212> DNA
<213> Plasmodium falciparum

<400> 309
aattaacgtg gatccaaatg ccaaccctaa cgctaattca aacgccaacc cgaatgtga
60

gct
63

<210> 310
<211> 55
<212> DNA
<213> Plasmodium falciparum

<400> 310
caacattcgg gttggcgttt ggattagcgt tagggttggc atttggatcc acgtt
55

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<210> 311
<211> 23
<212> PRT
<213> Plasmodium falciparum

<400> 311

Ile Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
1 5 10 15

Pro Asn Val Asp Pro Glu Leu
20

<210> 312
<211> 69
<212> DNA
<213> Plasmodium falciparum

<400> 312
aattaacgtg gatccaaatg ccaaccctaa cgctaattca aacgccaacc cgaatgttga
60

ccctgagct
69

<210> 313
<211> 61
<212> DNA
<213> Plasmodium falciparum

<400> 313
cagggtcaac attcgggttg gcgttggat tagcgttagg gttggcattt ggatccacgt
60

t
61

<210> 314
<211> 25
<212> PRT
<213> Plasmodium falciparum

<400> 314

Ile Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn
1 5 10 15

Pro Asn Val Asp Pro Asn Ala Glu Leu
20 25

<210> 315
<211> 75
<212> DNA
<213> Plasmodium falciparum

<400> 315
aattaacgtg gatccaaatg ccaaccctaa cgctaattca aacgccaacc cgaatgttga
60

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cccttaatgct gagct

75

<210> 316

<211> 67

<212> DNA

<213> Plasmodium falciparum

<400> 316

cagcattagg gtcaacatTC gggTggcgt ttggattAGC gttAGggTTG gcattTggat
60

ccacgTT

67

<210> 317

<211> 19

<212> PRT

<213> Plasmodium falciparum

<400> 317

Ile Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn
1 5 10 15

Val Glu Leu

<210> 318

<211> 57

<212> DNA

<213> Plasmodium falciparum

<400> 318

aattgatCCA aatGCCaACC ctaacgctaa tccaaacGCC aacCCGAATG ttGAGCT
57

<210> 319

<211> 49

<212> DNA

<213> Plasmodium falciparum

<400> 319

caacattcgg gttggcgTTT ggattAGcgt tagggttggc atttggatC
49

<210> 320

<211> 21

<212> PRT

<213> Plasmodium falciparum

<400> 320

Ile Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn
1 5 10 15

Val Asp Pro Glu Leu

20

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<210> 321
<211> 63
<212> DNA
<213> Plasmodium falciparum

<400> 321
aattgatcca aatgccaacc ctaacgctaa tccaaacgcc aacccgaatg ttgaccctga
60

gct
63

<210> 322
<211> 55
<212> DNA
<213> Plasmodium falciparum

<400> 322
cagggtaaac attcgggttg gcgtttggat tagcgtagg gttggcattt ggatc
55

<210> 323
<211> 23
<212> PRT
<213> Plasmodium falciparum

<400> 323

Ile Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn
1 5 10 15

Val Asp Pro Asn Ala Glu Leu
20

<210> 324
<211> 69
<212> DNA
<213> Plasmodium falciparum

<400> 324
aattgatcca aatgccaacc ctaacgctaa tccaaacgcc aacccgaatg ttgaccctaa
60

tgccgagct
69

<210> 325
<211> 61
<212> DNA
<213> Plasmodium falciparum

<400> 325
cggcattagg gtcaacattc gggttggcgt ttggattagc gttagggttg gcattggat
60

c
61

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<210> 326
<211> 21
<212> PRT
<213> Plasmodium falciparum

<400> 326

Ile Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser
1 5 10 15

Pro Cys Ser Val Thr
20

<210> 327
<211> 69
<212> DNA
<213> Plasmodium falciparum

<400> 327
aattgaatat ctgaacaaaa tccagaactc tctgtccacc gaatggtctc cgtgctccgt
60

taccttagta
69

<210> 328
<211> 69
<212> DNA
<213> Plasmodium falciparum

<400> 328
agcttactag gtaacggagc acggagacaa ttcgggtggac agagagttct ggattttgtt
60

cagatattc
69

<210> 329
<211> 24
<212> PRT
<213> Plasmodium vivax

<400> 329

Ile Pro Ala Gly Asp Arg Ala Asp Gly Gln Pro Ala Gly Asp Arg Ala
1 5 10 15

Ala Gly Gln Pro Ala Gly Glu Leu
20

<210> 330
<211> 72
<212> DNA
<213> Plasmodium vivax

<400> 330
aattccggct ggtgaccgtg cagatggcca gccagcgggt gaccgcgctg caggccagcc
60

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ggctggcgag ct
72

<210> 331
<211> 64
<212> DNA
<213> Plasmodium vivax

<400> 331
cgccagccgg ctggcctgca gcgcggtcac ccgctggctg gccatctgca cggtcaccag
60

ccgg
64

<210> 332
<211> 21
<212> PRT
<213> Plasmodium vivax

<400> 332

Ile Asp Arg Ala Ala Gly Gln Pro Ala Gly Asp Arg Ala Asp Gly Gln
1 5 10 15

Pro Ala Gly Glu Leu
20

<210> 333
<211> 63
<212> DNA
<213> Plasmodium vivax

<400> 333
aattgacaga gcagccggac aaccagcagg cgatcgagca gacggacagc ccgcagggga
60

gct
63

<210> 334
<211> 55
<212> DNA
<213> Plasmodium vivax

<400> 334
ccccctgcggg ctgtccgtct gctcgatcgc ctgctggttg tccggctgct ctgtc
55

<210> 335
<211> 21
<212> PRT
<213> Plasmodium vivax

<400> 335

Ile Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp
1 5 10 15

Gln Pro Gly Glu Leu
20

<210> 336
<211> 63
<212> DNA
<213> Plasmodium vivax

<400> 336
aattgcgaac ggccggta atcagccggg ggcaaacggc gcgggtgatc aaccagggga
60

gct
63

<210> 337
<211> 55
<212> DNA
<213> Plasmodium vivax

<400> 337
cccctggttg atcaccgcg ccgttgccc ccggctgatt accggcgccg ttcgc
55

<210> 338
<211> 21
<212> PRT
<213> Plasmodium vivax

<400> 338

Ile Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala Asp Asp
1 5 10 15

Gln Pro Gly Glu Leu
20

<210> 339
<211> 63
<212> DNA
<213> Plasmodium vivax

<400> 339
aattgcgaac ggccggata atcagccggg tgcaaacggg gcggatgacc aaccaggcga
60

gct
63

<210> 340
<211> 55
<212> DNA
<213> Plasmodium vivax

<400> 340
cgccctggttg gtcatccgcc ccgttgcac ccggctgatt atcggcgccg ttcgc
55

<210> 341

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<211> 39
<212> PRT
<213> Plasmodium vivax

<400> 341

Ile Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp
1 5 10 15

Gln Pro Gly Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala
20 25 30

Asp Asp Gln Pro Gly Glu Leu
35

<210> 342
<211> 117
<212> DNA
<213> Plasmodium vivax

<400> 342
aattgcgaac ggcgcggta atcagccggg agcaaacggc gcgggggatc aaccaggcgc
60

caatggtgca gacaaccagc ctggggcgaa tggagccgat gaccaacccg gcgagct
117

<210> 343
<211> 109
<212> DNA
<213> Plasmodium vivax

<400> 343
cgccgggttg gtcatcggtt ccattcgccc caggctggtt gtctgcacca ttggcgccctg
60

gttgatcccc cgcgccgtt gctccggct gattaccggc gccgttcgc
109

<210> 344
<211> 25
<212> PRT
<213> Plasmodium vivax

<400> 344

Ile Ala Pro Gly Ala Asn Gln Glu Gly Gly Ala Ala Ala Pro Gly Ala
1 5 10 15

Asn Gln Glu Gly Gly Ala Ala Glu Leu
20 25

<210> 345
<211> 75
<212> DNA
<213> Plasmodium vivax

<400> 345

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aattgcgccg ggcccaacc aggaaggtgg ggctgcagcg ccaggagcca atcaagaagg
60

cggcgcgcg gagct
75

<210> 346
<211> 67
<212> DNA
<213> Plasmodium vivax

<400> 346
ccgcgtgcacc gccttcttga ttggctcctg gcgctgcagc cccaccttcc tggttggcgc
60

ccggcgc
67

<210> 347
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site

<400> 347

Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu
20 25

<210> 348
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site

<400> 348
aattagcctg ttaaccgaag tggagacgcc gatccgtAAC gaatggggct gccgctgtAA
60

tgattcttcc gacgagct
78

<210> 349
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site

<400> 349

cgtcggaga atcattacag cggcagcccc attcggttacg gatcgccgtc tccacttcgg
60

ttaacaggct
70

<210> 350
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site

<400> 350

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu
20 25

<210> 351
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site

<400> 351
catgtctctg ctgaccgaag ttgaaacccc tatcagaaac gaatgggggt gcagatgtaa
60

cgattcaagt gatgagct
78

<210> 352
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site

<400> 352
catcaacttga atcgttacat ctgcacccccc attcggttct gataggggtt tcaacttcgg
60

tcagcagaga
70

<210> 353
<211> 26
<212> PRT
<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site

<400> 353

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Cys Asn Asp Ser Ser Asp Glu Leu
20 25

<210> 354

<211> 78

<212> DNA

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site

<400> 354

catgtctctg ctgaccgaag ttgaaacccc tatcagaaac gaatgggggt ctagatgtaa
60

cgattcaagt gatgagct

78

<210> 355

<211> 70

<212> DNA

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site

<400> 355

catcaacttga atcgttacat ctagaccccc attcgttct gataggggtt tcaacttcgg
60

tcagcagaga

70

<210> 356

<211> 26

<212> PRT

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site

<400> 356

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Ser Asn Asp Ser Ser Asp Glu Leu
20 25

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<210> 357
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 357
catgtctctg ctgaccgaag ttgaaacccc tatcagaaac gaatgggggt gcagatcgaa
60

cgattcaagt gatgagct
78

<210> 358
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 358
catcacttga atcgttcgat ctgcacccccc attcgttct gataggggtt tcaacttcgg
60

tcagcagaga
70

<210> 359
<211> 26
<212> PRT
<213> Influenza A virus

<400> 359

Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Glu Leu
20 25

<210> 360
<211> 78
<212> DNA
<213> Influenza A virus

<400> 360
aatttctctg ttaaccgaag tggagacgcc gattcgtaac gaatggggta gcccgtctaa
60

tgatagctct gacgagct
78

<210> 361
<211> 70
<212> DNA
<213> Influenza A virus

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<400> 361
cgtcagagct atcattagag cggctacccc attcggtacg aatcggtcgtc tccacttcgg
60

ttaacagaga
70

<210> 362
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 362

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1           5           10          15

Ser Arg Ser Asn Asp Ser Ser Asp Glu Leu
20           25

<210> 363
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 363
catgtctctg ctgaccgaag ttgaaacccc tatcagaaac gaatgggggt ctagatcgaa
60

cgattcaagt gatgagct
78

<210> 364
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 364
catcaacttga atcggtcgat cttagacccccc attcggttct gataggggtt tcaacttcgg
60

tcagcagaga
70

<210> 365
<211> 21
<212> DNA
<213> Artificial Sequence

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<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 365
gcgggatccg gagcttatcg a
21

<210> 366
<211> 24
<212> PRT
<213> Artificial sequence

<220>
<223> Amplification primer containing a restriction site

<400> 366

Gly Cys Gly Cys Thr Cys Gly Ala Gly Ala Thr Cys Ala Cys Thr Thr
1           5           10          15

Gly Ala Ala Thr Cys Gly Thr Thr
20

<210> 367
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> Amplification primer containing a restriction site

<400> 367
gcgctcgaga gcttattgac cgaagttgaa acc
33

<210> 368
<211> 24
<212> DNA
<213> Artificial sequence

<220>
<223> Amplification primer containing restriction site

<400> 368
gcgctgcaga tcacttgaat cgtt
24

<210> 369
<211> 25
<212> DNA
<213> Artificial sequence

<220>
<223> Amplification primer containing a restriction site

<400> 369
gcgctgcagt ctctgctgac cgaag
25

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<210> 370
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 370
cgcgacatgt ctctgctgac cg
22

<210> 371
<211> 31
<212> DNA
<213> Artificial sequence

<220>
<223> oligonucleotide

<400> 371
cgcaagctta aacaacagta gtctccggaa g
31

<210> 372
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 372
gcgaagctta ctaaggggag cggcctcgac gacgaacaac agtagtctcc gg
52

<210> 373
<211> 55
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 373
gcgaagctta ctaacaaggg gagccgcctc gtcgacgaac aacagtagtc tccgg
55

<210> 374
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 374

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gcgaagctta ctaaggcgag ggagtgcgcc gacgagggga gcccctcg
49

<210> 375
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site

<400> 375
gcgaagctta ctaacaaggc gagggagtgc gccgacgagg ggagcggcct cg
52

<210> 376
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site

<400> 376
gcgaagctta ctacggcgat tgagagcgtc gacggcgagg cgagggagt
49

<210> 377
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site

<400> 377
gcgaagctta ctaacacggc gattgagagc gtcgacggcg aggcgaggga gt
52

<210> 378
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site

<400> 378
gcgaagctta ctaacattga gattcccgag attgagatcg ccggcgacgc ggcgatttag
60

agcgtc
66

<210> 379
<211> 32
<212> DNA

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<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 379
gcgaagctta ctattgagat tcccgagatt ga
32

<210> 380
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease
site

<400> 380
ggaaagctta ctaacattga gattcccg
28

<210> 381
<211> 35
<212> PRT
<213> Hepatitis B virus

<400> 381

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg
1 5 10 15

Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser Gln Ser Arg Glu
20 25 30

Ser Gln Cys
35

<210> 382
<211> 34
<212> PRT
<213> Hepatitis B virus

<400> 382

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg
1 5 10 15

Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser Gln Ser Arg Glu
20 25 30

Ser Gln

<210> 383
<211> 24
<212> PRT

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<213> Hepatitis B virus

<400> 383

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg
1 5 10 15

Arg Arg Arg Ser Gln Ser Pro Cys
20

<210> 384

<211> 23

<212> PRT

<213> Hepatitis B virus

<400> 384

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg
1 5 10 15

Arg Arg Arg Ser Gln Ser Pro
20

<210> 385

<211> 16

<212> PRT

<213> Hepatitis B virus

<400> 385

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Cys
1 5 10 15

<210> 386

<211> 15

<212> PRT

<213> Hepatitis B virus

<400> 386

Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro
1 5 10 15

<210> 387

<211> 9

<212> PRT

<213> Hepatitis B virus

<400> 387

Val Arg Arg Arg Gly Arg Ser Pro Cys
1 5

<210> 388

<211> 8

<212> PRT

<213> Hepatitis B virus

<400> 388

Val Arg Arg Arg Gly Arg Ser Pro
1 5

<210> 389
<211> 203
<212> PRT
<213> Hepatitis B virus

<400> 389

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Pro Tyr Lys Glu Phe Gly Ala Thr
20 25 30

Val Glu Leu Leu Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg
35 40 45

Asp Leu Leu Asp Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser
50 55 60

Pro Glu His Cys Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu
65 70 75 80

Cys Trp Gly Glu Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu
85 90 95

Glu Asp Pro Ala Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn
100 105 110

Met Gly Leu Lys Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu
115 120 125

Thr Phe Gly Arg Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val
130 135 140

Trp Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu
145 150 155 160

Ser Thr Leu Pro Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro
165 170 175

Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg
180 185 190

Arg Arg Arg Ser Gln Ser Arg Glu Ser Gln Cys
195 200

<210> 390
<211> 176

<212> PRT
 <213> Artificial sequence

 <220>
 <223> Influenza-Hepatitis B chimera

 <400> 390

Met	Asp	Ile	Asp	Pro	Tyr	Lys	Glu	Phe	Gly	Ala	Thr	Val	Glu	Leu	Leu
1															
														15	

Ser	Phe	Leu	Pro	Ser	Asp	Phe	Phe	Pro	Ser	Val	Arg	Asp	Leu	Leu	Asp
														30	

Thr	Ala	Ser	Ala	Leu	Tyr	Arg	Glu	Ala	Leu	Glu	Ser	Pro	Glu	His	Cys
														45	

Ser	Pro	His	His	Thr	Ala	Leu	Arg	Gln	Ala	Ile	Leu	Cys	Trp	Gly	Glu
														60	

Leu	Met	Thr	Leu	Ala	Thr	Trp	Val	Gly	Val	Asn	Leu	Glu	Asp	Gly	Ile
														80	

Ser	Leu	Leu	Thr	Glu	Val	Glu	Thr	Pro	Ile	Arg	Asn	Glu	Trp	Gly	Cys
														95	

Arg	Cys	Asn	Asp	Ser	Ser	Asp	Glu	Leu	Pro	Ala	Ser	Arg	Asp	Leu	Val
														110	

Val	Ser	Tyr	Val	Asn	Thr	Asn	Met	Gly	Leu	Lys	Phe	Arg	Gln	Leu	Leu
														125	

Trp	Phe	His	Ile	Ser	Cys	Leu	Thr	Phe	Gly	Arg	Glu	Thr	Val	Ile	Glu
														140	

Tyr	Leu	Val	Ser	Phe	Gly	Val	Trp	Ile	Arg	Thr	Pro	Pro	Ala	Tyr	Arg
														160	

Pro	Pro	Asn	Ala	Pro	Ile	Leu	Ser	Thr	Leu	Pro	Glu	Thr	Thr	Val	Val
														175	

<210>	391														
<211>	177														
<212>	PRT														
<213>	Artificial sequence														

<220>															
<223>	Influenza-Heoatitis B mutant chimera														

<400>	391														
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Met	Asp	Ile	Asp	Pro	Tyr	Lys	Glu	Phe	Gly	Ala	Thr	Val	Glu	Leu	Leu
1															
														15	

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Gly Ile
65 70 75 80

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala
85 90 95

Arg Ala Asn Asp Ser Ser Asp Glu Leu Pro Ala Ser Arg Asp Leu Val
100 105 110

Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys Phe Arg Gln Leu Leu
115 120 125

Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg Glu Thr Val Ile Glu
130 135 140

Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala Tyr Arg
145 150 155 160

Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu Thr Thr Val Val
165 170 175

Cys

<210> 392

<211> 183

<212> PRT

<213> Hepatitis B virus

<400> 392

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu
1 5 10 15

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu
20 25 30

Trp Gly Ile Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu
35 40 45

Leu Leu Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu
50 55 60

Leu Asp Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu
65 70 75 80

His Cys Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp
85 90 95

Gly Glu Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp
100 105 110

Pro Ala Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly
115 120 125

Leu Lys Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe
130 135 140

Gly Arg Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile
145 150 155 160

Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr
165 170 175

Leu Pro Glu Thr Thr Val Val
180

<210> 393
<211> 184
<212> PRT
<213> Hepatitis B virus

<400> 393

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu
1 5 10 15

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu
20 25 30

Trp Gly Ile Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu
35 40 45

Leu Leu Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu
50 55 60

Leu Asp Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu
65 70 75 80

His Cys Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp
85 90 95

Gly Glu Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp
100 105 110

Pro Ala Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly
115 120 125

Leu Lys Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe
130 135 140

Gly Arg Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile
145 150 155 160

Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr
165 170 175

Leu Pro Glu Thr Thr Val Val Cys
180

<210> 394

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site.

<400> 394

Met Gly Ser Arg Cys Asn Asp Ser Ser Asp Ile Asp Pro Tyr Lys Glu
1 5 10 15

Phe Gly

<210> 395

<211> 59

<212> DNA

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site.

<400> 395

ggcgccatgg ggtctagatg taacgattca agtgacatcg acccttataa agaatttcg
59

<210> 396

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Amplification primer containing a restriction endonuclease site.

<400> 396

Met Gly Cys Asn Asp Ser Ser Asp Ile Asp Pro Tyr Lys Glu Phe Gly
1 5 10 15

<210> 397
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification primer containing a restriction endonuclease site.

<400> 397
gccccatggg gtgttaacgat tcaagtgaca tcgaccctta taaagaattt gg
52

<210> 398
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Hbc precore alternative linker

<400> 398

Glu Leu Leu Gly Trp Leu Trp Gly Ile Asp Ile
1 5 10

<210> 399
<211> 14
<212> PRT
<213> Hepatitis B virus

<400> 399

Ser Lys Leu Cys Leu Gly Trp Leu Trp Gly Met Asp Ile Asp
1 5 10

<210> 400
<211> 38
<212> PRT
<213> Hepatitis B virus

<400> 400

Met Gly Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu
1 5 10 15

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Leu Gly Trp Leu
20 25 30

Trp Gly Ile Asp Ile Asp
35

<210> 401
<211> 24
<212> PRT
<213> Hepatitis B virus

<400> 401

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp
20

<210> 402

<211> 27

<212> PRT

<213> Hepatitis B virus

<400> 402

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Asp
20 25

<210> 403

<211> 27

<212> PRT

<213> Hepatitis B virus

<400> 403

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Glu Leu Asp
20 25

<210> 404

<211> 27

<212> PRT

<213> Artificial sequence

<220>

<223> Chimera of Hepatitis B virus and Influenza A virus

<400> 404

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Cys Asn Asp Ser Ser Asp Glu Leu Asp
20 25

<210> 405

<211> 27

<212> PRT

<213> Artificial sequence

<220>

<223> Chimera of Hepatitis B and Influenza A viruses

<400> 405

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Ser Asn Asp Ser Ser Asp Glu Leu Asp
20 25

<210> 406

<211> 52

<212> PRT

<213> Artificial sequence

<220>

<223> Chimera of Hepatitis B and Influenza A viruses

<400> 406

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp Leu Glu Ser Leu Leu Thr Glu Val
20 25 30

Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys Arg Cys Asn Asp Ser Ser
35 40 45

Asp Glu Leu Asp
50

<210> 407

<211> 52

<212> PRT

<213> Artificial sequence

<220>

<223> Chimera of Hepatitis B and Influenza A viruses

<400> 407

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Leu Glu Ser Leu Leu Thr Glu Val
20 25 30

Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys Arg Cys Asn Asp Ser Ser
35 40 45

Asp Glu Leu Asp
50

<210> 408

<211> 77

<212> PRT

<213> Artificial sequence

<220>

<223> Chimera of Hepatitis B and Influenza A viruses

<400> 408

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Leu Gln Ser Leu Leu Thr Glu Val
20 25 30

Glu Thr Pro Ile Arg Asn Glu Trp Gly Ser Arg Ser Asn Asp Ser Ser
35 40 45

Asp Leu Glu Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu
50 55 60

Trp Gly Cys Arg Cys Asn Asp Ser Ser Asp Glu Leu Asp
65 70 75

<210> 409

<211> 6

<212> PRT

<213> Influenza virus

<400> 409

Met Leu Glu Pro Phe Gln
1 5

<210> 410

<211> 6

<212> PRT

<213> Influenza virus

<400> 410

Met Leu Glu Pro Leu Gln
1 5

<210> 411

<211> 6

<212> PRT

<213> Artificial sequence

<220>

<223> primer protein sequence

<400> 411

Met Asp Ile Asp Pro Tyr
1 5

<210> 412

<211> 7

<212> PRT

<213> Artificial sequence

<220>

<223> protein primer

<400> 412

Val Val Thr Thr Glu Pro Leu
1 5

<210> 413

<211> 15

<212> PRT

<213> Artificial sequence

<220>

<223> primer protein sequence

<400> 413

Thr Glu Arg Gly Phe Thr Leu Ser Ser Ile His Phe Trp Leu Leu
1 5 10 15

<210> 414

<211> 7

<212> PRT

<213> Artificial sequence

<220>

<223> protein primer

<400> 414

Leu Thr Phe Gly Arg Glu Thr
1 5

<210> 415

<211> 13

<212> PRT

<213> Artificial sequence

<220>

<223> protein primer

<400> 415

Leu Ala Thr His His Pro Ser Ser His Glu Pro Ser Glu
1 5 10

<210> 416

<211> 7

<212> PRT

<213> Artificial sequence

<220>

<223> protein

<400> 416

Ala Leu Arg Gln Ala Ile Leu
1 5

<210> 417
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> protein sequence

<400> 417

Cys Val Val Thr Thr Glu Pro
1 5

<210> 418
<211> 15
<212> PRT
<213> Artificial sequence

<220>
<223> protein

<400> 418

Arg Gly Phe Thr Leu Ser Ser Ile Cys Phe Trp Leu Leu Gln Arg
1 5 10 15

<210> 419
<211> 12
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer

<400> 419

Gly Met Asn Thr Asn Cys Tyr Ser Val Val Leu Asp
1 5 10

<210> 420
<211> 15
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer

<400> 420

Glu Gly Trp Cys Leu Ile Ala Gln Arg Cys Ala Thr His His Pro
1 5 10 15

<210> 421
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer

<400> 421

Trp Gly Glu Leu Met Thr Leu Ala Thr
1 5

<210> 422
<211> 13
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer

<400> 422

Glu Gly Trp Cys Leu Ile Cys Gln Arg Leu Ala Thr His
1 5 10

<210> 423
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer

<400> 423

Leu Gly Met Asn Thr Asn
1 5

<210> 424
<211> 13
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer

<400> 424

Gly Leu Lys Phe Arg Gln Cys Leu Trp Phe His Ile Ser
1 5 10

<210> 425
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer

<400> 425

Trp Thr Cys Leu Thr Met Leu Glu Gly
1 5

<210> 426
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> primer protein sequence

<400> 426

Ala Thr Trp Val Gly Val
1 5

<210> 427

<211> 6

<212> PRT

<213> Artificial sequence

<220>

<223> primer protein sequence

<400> 427

Met Gly Leu Lys Phe Arg
1 5

<210> 428

<211> 15

<212> PRT

<213> Artificial sequence

<220>

<223> primer protein sequence

<400> 428

Glu Gly Cys Cys Leu Ile Ala Gln Arg Leu Ala Thr His His Pro
1 5 10 15

<210> 429

<211> 14

<212> PRT

<213> Artificial sequence

<220>

<223> protein primer sequence

<400> 429

Gly Leu Lys Cys Arg Gln Leu Leu Trp Phe Ser Ala Pro Asp
1 5 10

<210> 430

<211> 10

<212> PRT

<213> Artificial sequence

<220>

<223> protein primer sequence

<400> 430

Ser Ala Pro Asp Asp Glu Cys Asn Val Gly
1 5 10

<210> 431

<211> 8
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer sequence

<400> 431

Ala Ser Cys Asp Leu Val Val Ser
1 5

<210> 432
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer sequence

<400> 432

Ile Gly Asp Glu Leu Asn Val Gly Val
1 5

<210> 433
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer sequence

<400> 433

Ile Gly Asp Glu Cys Asn Val Gly Val
1 5

<210> 434
<211> 12
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer sequence

<400> 434

Gly Ile Gln Lys Glu Leu Pro Ala Ser Arg Asp Leu
1 5 10

<210> 435
<211> 12
<212> PRT
<213> Artificial sequence

<220>
<223> protein primer sequence

<400> 435

Gly Ile Gln Lys Glu Leu Pro Ala Ser Cys Asp Leu

1

5

10

<210> 436

<211> 36

<212> PRT

<213> Artificial sequence

<220>

<223> primer protein sequence

<400> 436

Ile Leu Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His
1 5 10 15

Gln Lys Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala
20 25 30

Ile Ile Glu Leu
35

<210> 437

<211> 24

<212> PRT

<213> Artificial sequence

<220>

<223> primer protein sequence

<400> 437

Ile Val Thr Lys Glu Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp
1 5 10 15

Thr Ser Thr Asn Gly Ile Glu Leu
20

<210> 438

<211> 15

<212> PRT

<213> Artificial sequence

<220>

<223> protein primer sequence

<400> 438

Ile Val Tyr Gln His Ser His Gly Glu Asp Arg Pro Gly Glu Leu
1 5 10 15

<210> 439

<211> 26

<212> PRT

<213> Artificial sequence

<220>

<223> protein primer sequence

<400> 439

Ile Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Ser Arg Ser Asn Asp Ser Ser Asp Glu Leu
20 25

<210> 440
<211> 43
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 440
ccatggacat cgacccttat cgcaatttgg agctactgtg gag
43

<210> 441
<211> 44
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 441
ctccacagta gctccaaatt cgcgataagg gtcgatgtcc atgg
44

<210> 442
<211> 37
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 442
cactaatatg ggcctaaggt tcaggcaact cttgtgg
37

<210> 443
<211> 37
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 443
ccacaagagt tgcctgaacc ttaggccccat attagtg
37

<210> 444
<211> 41
<212> DNA
<213> Artificial sequence

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<220>
<223> primer

<400> 444
gccttagagt ctccctgagca ttgttcacct caccatactg c
41

<210> 445
<211> 41
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 445
gcagttatgggt gaggtgaaga atgctcagga gactctaagg c
41

<210> 446
<211> 44
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 446
ggcaactctt gtggtttcac atttcttgtc tcattttgga agag
44

<210> 447
<211> 45
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 447
ctcttccaaa agtgagagaa gaaatgtgaa accacaagag ttgcc
45

<210> 448
<211> 42
<212> DNA
<213> Artificial sequence

<220>
<223> primer

<400> 448
cctgggtggg tgttaatttgg aaagaagatc cagcgtctag ag
42

<210> 449
<211> 42
<212> DNA
<213> Artificial sequence

<220>
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<223> primer

<400> 449
ctctagacgc tggatcttct ttcaaattaa cacccaccca gg
42

<210> 450

<211> 24

<212> PRT

<213> Artificial sequence

<220>

<223> peptide conjugate sequence

<400> 450

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp
20

<210> 451

<211> 20

<212> PRT

<213> Yersinia pestis

<400> 451

Gly Asp Ile Pro Tyr Leu Gly Ala Leu Phe Arg Arg Lys Ser Glu Leu
1 5 10 15

Thr Arg Arg Thr
20

<210> 452

<211> 24

<212> PRT

<213> Influenza

<400> 452

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp
20

<210> 453

<211> 23

<212> PRT

<213> Influenza

<400> 453

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys
1 5 10 15

Arg Cys Asn Asp Ser Ser Asp
20

<210> 454
<211> 24
<212> PRT
<213> Influenza

<400> 454

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp
20

<210> 455
<211> 23
<212> PRT
<213> Influenza

<400> 455

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys
1 5 10 15

Arg Cys Asn Asp Ser Ser Asp
20